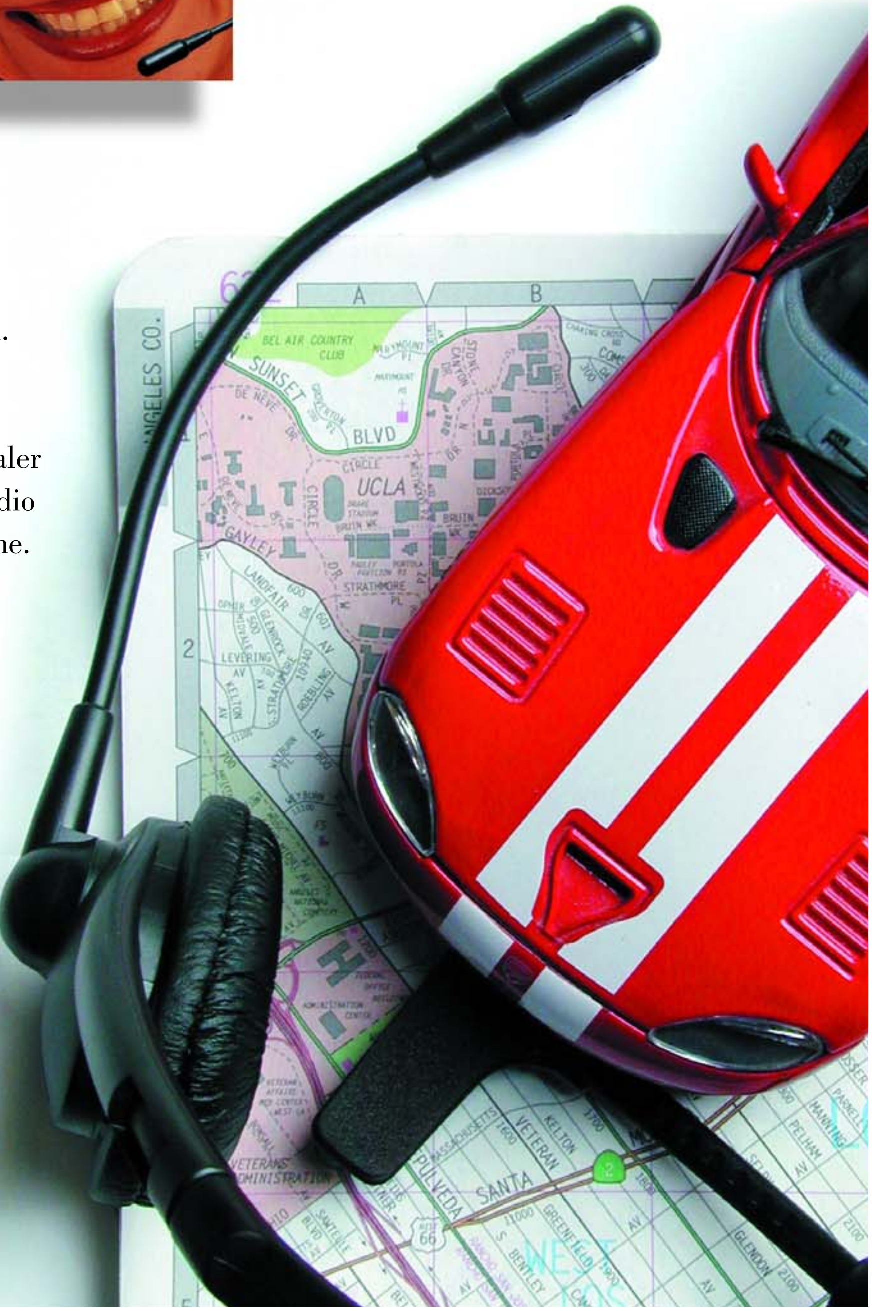
CHAPTER 11

Computers and Society: Home, Work, and Ethical Issues

"Look, hands-free!" For years, your friend has told you that using the mobile telephone while driving is dangerous. Although you are aware of the risks, you accomplish a lot while in the car. Your Web-enabled cellular telephone allows you to return countless calls, as well as check stock prices. Someone out there agrees with your friend, however. The city in which you live just made it illegal to hold a cellular telephone while driving. City officials say you need both hands on the steering wheel. They suggest consumers look into hands-free Bluetooth™-enabled cellular devices.

You immediately visit a Bluetooth™ dealer and purchase a cellular telephone that uses radio waves to *connect* to a headset with a microphone. This is great! You speak into the microphone and, according to your verbal instructions, the telephone dials a telephone number, connects to the Internet, and checks stock prices. The telephone even has voice output that speaks information such as the stock prices, so you can keep your eyes on the road.

This new wireless technology is just what your friend has suggested. When you leave the store, you call your friend from the car and invite her to dinner. She will be glad to hear she was right.



OBJECTIVES

After completing this chapter, you will be able to:

- Understand that computers have made a tremendous difference in daily living
- Explain how computers are used at home
- Describe how computers change the way society interacts with disciplines such as education, entertainment, finance, government, health care, science, publishing, and travel
- Recognize the issues associated with the digital divide
- Understand how e-commerce affects the way people conduct business
- Identify ways virtual reality, intelligent agents, and robots are being used in daily life
- Learn how to prevent health-related disorders and injuries due to computer use
- Understand how to design a workspace ergonomically
- Recognize symptoms of computer addiction
- Explain green computing
- Understand ethical issues surrounding computer use

LIVING WITH COMPUTERS

The computer has changed society today as much as the industrial revolution changed society in the eighteenth and nineteenth centuries. Computers are everywhere — at home, at work, and at school (Figure 11-1).

Society has benefited greatly from computers. In a recent report, the United States government attributed one-third of the country's economic growth to digital technologies, resulting in tremendous increases in productivity. Both business and home users can make well-informed

Figure 11-1 People use computers everywhere — at home, at work, and at school.

decisions because they have instant access to information from anywhere in the world. Students have more tools to assist them in the learning process. Homes have many more conveniences, which potentially could allow families to spend more quality time together.

Nearly every discipline uses computers. The use of computers in fields such as education, finance, government, health care, science, publishing, and travel has had a tremendous impact on society. The following pages describe how computers have made a difference in our lives at home, as well as in our interactions with these disciplines. You may interact directly with computers in these areas. Or, you may reap the benefits from breakthroughs and advances in these fields. The use of computers in each of these areas, however, raises some important issues. These issues are explored, as well.

At Home

In a growing number of homes, the computer no longer is a convenience. Instead, it has become a basic necessity. Each family member uses the computer for different purposes. These include entertainment, research and education, budgeting and personal financial management, home business management, personal and business communications, and Web access (Figure 11-2).

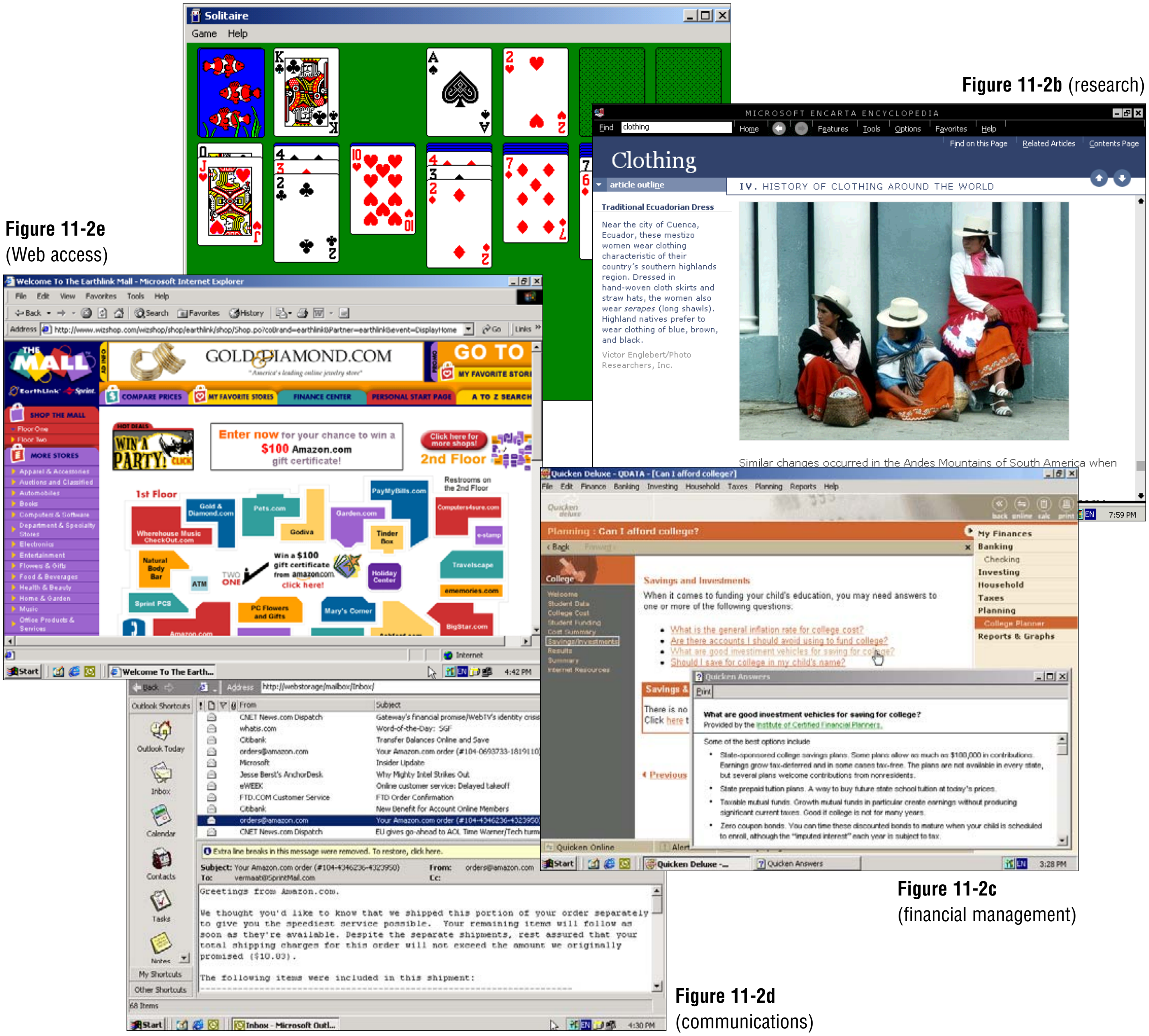


Figure 11-2a (entertainment)

Figure 11-2b (research)

Clothing

IV. HISTORY OF CLOTHING AROUND THE WORLD

Traditional Ecuadorian Dress

Near the city of Cuenca, Ecuador, these mestizo women wear clothing characteristic of their country's southern highlands region. Dressed in hand-woven cloth skirts and straw hats, the women also wear *serapes* (long shawls). Highland natives prefer to wear clothing of blue, brown, and black.

Victor Englebert/Photo Researchers, Inc.

Similar changes occurred in the Andes Mountains of South America when

Figure 11-2c (financial management)

Planning : Can I afford college?

Savings and Investments

When it comes to funding your child's education, you may need answers to one or more of the following questions:

- What is the general inflation rate for college cost?
- Are there accounts I should avoid using to fund college?
- What are good investment vehicles for saving for college?
- Should I save for college in my child's name?

Quicken Answers

What are good investment vehicles for saving for college?
Provided by the Institute of Certified Financial Planners.

Some of the best options include

- State-sponsored college savings plans. Some plans allow as much as $100,000 in contributions. Earnings grow tax-deferred and in some cases tax-free. The plans are not available in every state, but several plans welcome contributions from nonresidents.
- State prepaid tuition plans. A way to buy future state school tuition at today's prices.
- Taxable mutual funds. Growth mutual funds in particular create earnings without producing significant current taxes. Good if college is not for many years.
- Zero coupon bonds. You can time these discounted bonds to mature when your child is scheduled to enroll, although the "imputed interest" each year is subject to tax.

Figure 11-2d (communications)

From	Subject
CNET News.com Dispatch	Gateway's financial promise/WebTV's identity crisis
whatis.com	Word-of-the-Day: SGF
Citibank	Transfer Balances Online and Save
orders@amazon.com	Your Amazon.com order (#104-0693733-1819110)
Microsoft	Insider Update
Jesse Berst's AnchorDesk	Why Mighty Intel Strikes Out
eWEEK	Online customer service: Delayed takeoff
FTD.COM Customer Service	FTD Order Confirmation
Citibank	New Benefit for Account Online Members
orders@amazon.com	Your Amazon.com order (#104-4346236-4323950)
CNET News.com Dispatch	EU gives go-ahead to AOL Time Warner/Tech turm

Extra line breaks in this message were removed. To restore, click here.

Subject: Your Amazon.com order (#104-4346236-4323950) From: orders@amazon.com
To: vermaat@SprintMail.com Cc:

```
Greetings from Amazon.com.

We thought you'd like to know that we shipped this portion of your order separately
to give you the speediest service possible.  Your remaining items will follow as
soon as they're available. Despite the separate shipments, rest assured that your
total shipping charges for this order will not exceed the amount we originally
promised ($10.83).

The following items were included in this shipment:
```

Figure 11-2e (Web access)

Figure 11-2 Family members each use computers for different reasons.

The main reason computers have infiltrated homes is because people want access to the Web. Home users connect to the Web for a variety of reasons.

- Access a wealth of information, news, research, and educational material
- Shop for goods and services
- Bank and invest
- Take a course or access other educational material
- Download and listen to music
- Download and watch movies
- Access sources of entertainment and leisure such as online games, magazines, and vacation planning guides
- Communicate with others around the world

Computers networked to the world via the Internet have become a primary means of communications for home users. E-mail messages fill inboxes. Instant messaging services alert you to calendar appointments, stock quotes, sports scores, weather, or when a certain person is online. While in chat rooms, you meet and converse with people from all over the globe. With the cost of PC cameras less than one hundred dollars, you easily can have a video conference with friends and family members.

Communications are not limited to text. With today's technology, you also can transmit voice, sounds, video, and graphics. As shown in Figure 11-3, you can take a photograph with a PC camera and send the digitized image to anyone. Figure 11-4 shows that you can have live conversations with others.

To meet the varying needs of consumers, today's homes have a variety of computers. These include desktop, notebook, and handheld computers; Web-enabled telephones and pagers; and Internet appliances.

Some of these computers are available in a variety of stylish colors and sleek designs (Figure 11-5). This allows you to coordinate computers with room décor and lifestyle.

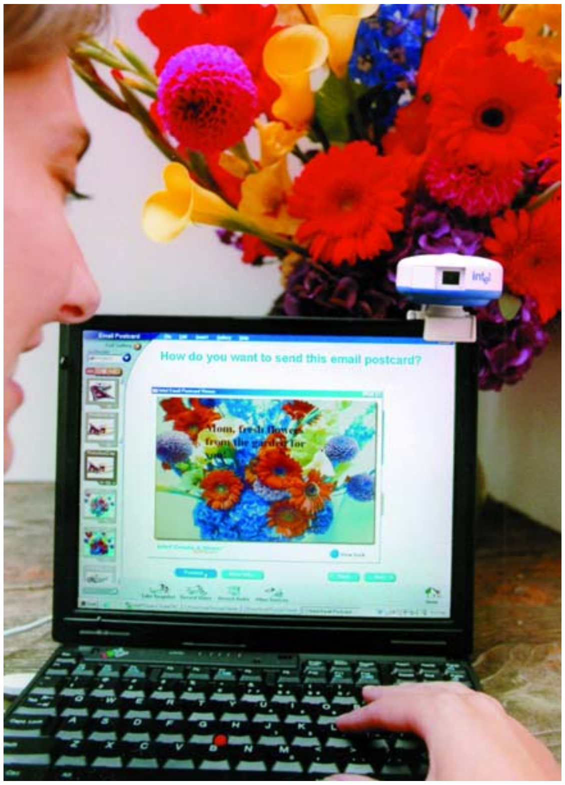

How do you want to send this email postcard?

Figure 11-3 This user photographed her freshly picked flowers with her PC camera, saved the image on the computer, and e-mailed the image of the flowers to her mother.

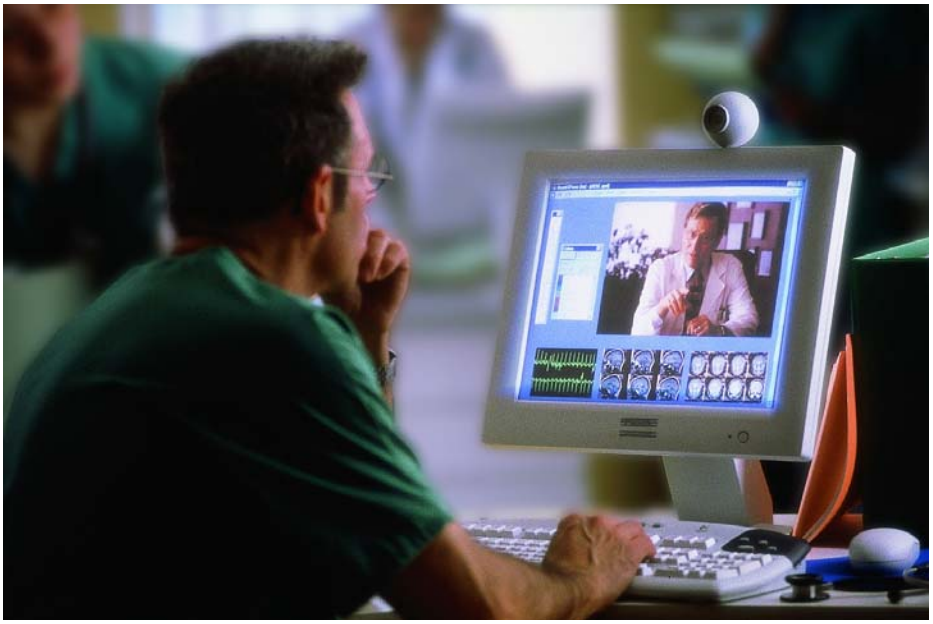


Figure 11-4 Using videoconferencing software, you can have live conversations with others through your computer.

Internet appliances are ideal for the family that uses the computer only for Web access (Figure 11-6). Other more sophisticated home users network computers throughout the house, so family members can access each other's files, printers, and other devices.

Figure 11-5 Many computers are available in a variety of sleek designs and colors.

Figure 11-6 This home user sits at the kitchen table and searches the Web using an Internet appliance.

TECHNOLOGY TRAILBLAZER

STEVE **WOZNIAK**

Steve Wozniak is such a Tetris fanatic that he plays even during the Superbowl. His high score is 710,000.

Wozniak was named to the National Inventors Hall of Fame in Akron, Ohio, for his $666 Apple II, which combined the central processing unit, keyboard, and disk drive into one unit. With an intense interest in computers, Wozniak devoted his spare time to designing and building machines. One of his projects was a *blue box* that contained a whistle from a Cap'n Crunch cereal box. The whistle could generate tones capable of making telephone calls.

Wozniak began working at Hewlett-Packard after dropping out of the University of California at Berkeley. At HP he met Steve Jobs, who was a summer employee. In 1976, these two creative visionaries developed the Apple I, and it was an instant success. It led to the Apple II in 1979, the first mass-marketed personal computer, and eventually to the Macintosh in 1984. Although Wozniak left Apple in 1985 to spend time with his family, work with community projects, and teach, he still serves as an adviser to the corporation.

For more information on Steve Wozniak, visit the Discovering Computers 2002 People Web page (**scsite.com/dc2002/people.htm**) and click Steve Wozniak.

Education

Education is the process of developing knowledge through instruction. Traditionally, this instruction came from people such as parents, teachers, and employers, and from printed material such as books, journals, and guides. Today, educators are turning to computers to assist with the learning process.

As the costs of personal computers drop, many schools and businesses can afford to equip labs and classrooms with computers (Figure 11-7). In these labs, students use software packages to complete assignments. Some educators also use computer-based training and Web-based training along with or as a replacement for their lecture presentations.

Computer-based training (**CBT**), also called **computer-aided instruction** (**CAI**), helps students learn by using computers and completing exercises with instructional software (Figure 11-8). **Web-based training** (**WBT**) is a type of CBT that

Figure 11-7 Many schools and businesses have computer labs to provide an environment conducive for students and employees to learn.

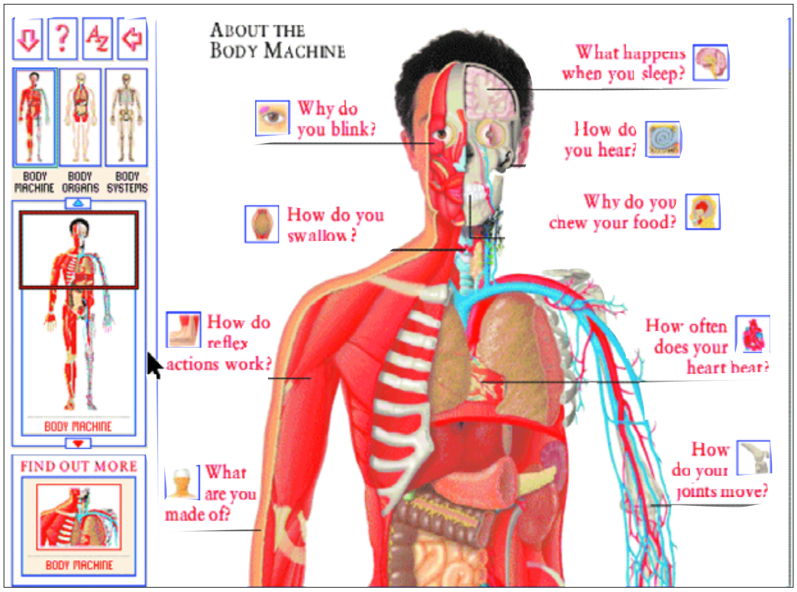


Figure 11-8 The Ultimate Human Body is a popular educational program that allows students to interact with and learn about the human body. For example, clicking the heart allows students to see and hear a human heart beat.

ISSUE

Books Versus Bytes

Electronic Books

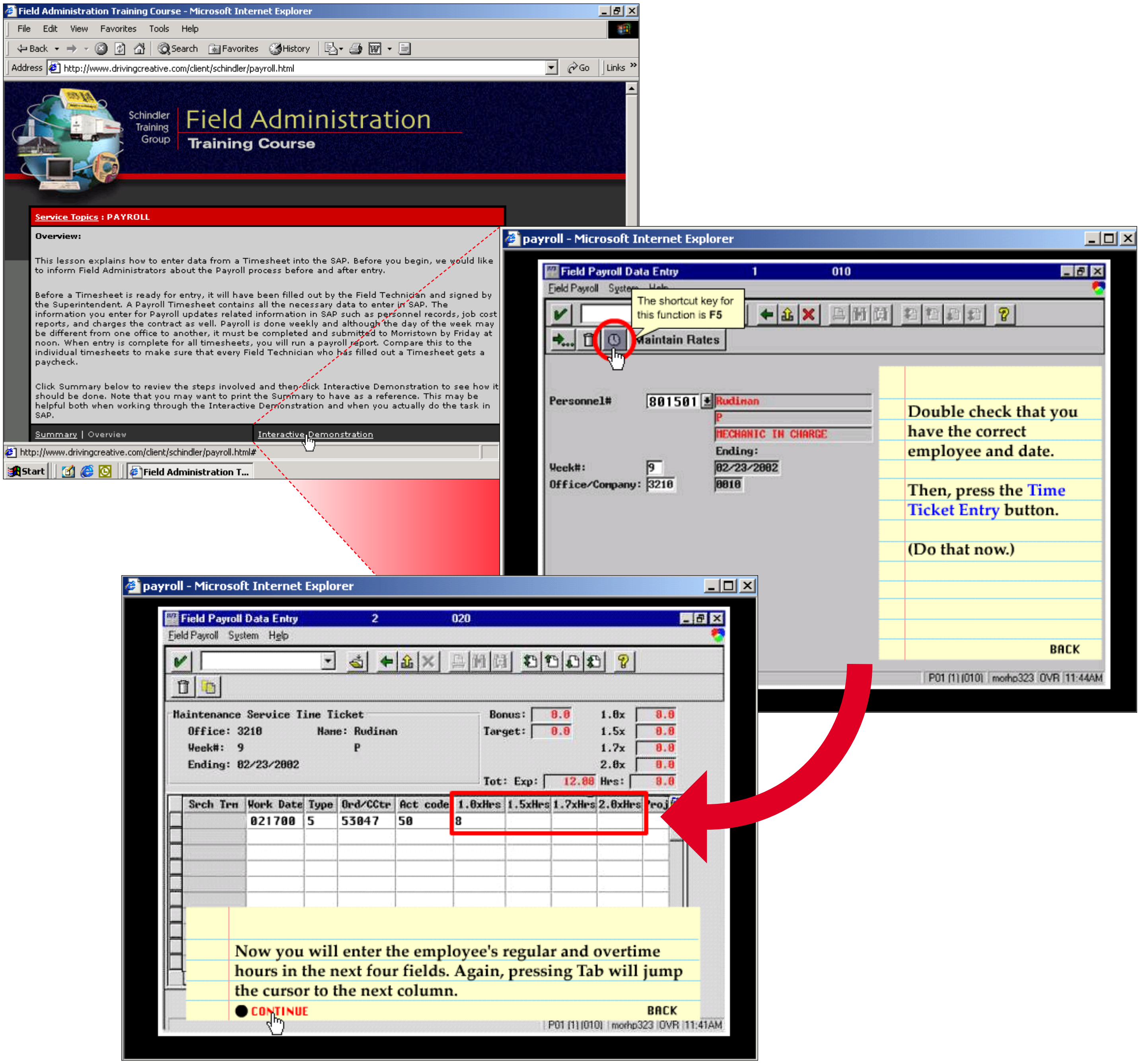
In one county, the number of computers purchased by local school districts increased by 85 percent, while the supply of library books declined by almost 10 percent. School officials claim computers extend learning opportunities and satisfy computer literacy needed in today's technological world. Yet, some parents complain that computer purchases represent frivolous, status-seeking spending. How should a school district's money be spent? If you were an administrator, what percentage of your budget would you spend on computers? On library books and textbooks? Why? What factors would influence your decision? Do you think the availability of books in electronic form, such as CD-ROM, e-books, and the Internet, will cause books as we know them today to become obsolete?

For more information on books versus computers, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc 2002/issues.htm**) and click Chapter 11 Issue #1.

uses Internet technology (Figure 11-9). CBT and WBT typically consist of self-directed, self-paced instruction on a topic.

CBT and WBT are popular in business, industry, and schools for teaching new skills or enhancing existing skills of employees, teachers, or students. When using CBT or WBT, students become actively involved in the learning process instead of passive recipients of information. Some of the many advantages of CBT and WBT over traditional training include the following:

- Self-paced study – students can progress at their own pace, skipping strong areas to focus on areas of weakness.
- Unique content – multimedia content appeals to many types of learners and can help make difficult concepts simple.
- Unique instructional experience – **simulations**, or computer-based models of real-life situations, allow students to learn skills in hazardous, emergency, or other situations.
- Reduced training costs – elimination of travel expenses reduces training costs. Students can access training materials from home, work, or any location that has a computer.


Field Administration Training Course - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://www.drivingcreative.com/client/schindler/payroll.html
Go Links
Schindler Training Group
Field Administration
Training Course
Service Topics : PAYROLL

Overview:

This lesson explains how to enter data from a Timesheet into the SAP. Before you begin, we would like to inform Field Administrators about the Payroll process before and after entry.

Before a Timesheet is ready for entry, it will have been filled out by the Field Technician and signed by the Superintendent. A Payroll Timesheet contains all the necessary data to enter in SAP. The information you enter for Payroll updates related information in SAP such as personnel records, job cost reports, and charges the contract as well. Payroll is done weekly and although the day of the week may be different from one office to another, it must be completed and submitted to Morristown by Friday at noon. When entry is complete for all timesheets, you will run a payroll report. Compare this to the individual timesheets to make sure that every Field Technician who has filled out a Timesheet gets a paycheck.

Click Summary below to review the steps involved and then click Interactive Demonstration to see how it should be done. Note that you may want to print the Summary to have as a reference. This may be helpful both when working through the Interactive Demonstration and when you actually do the task in SAP.

Summary | Overview
Interactive Demonstration
http://www.drivingcreative.com/client/schindler/payroll.html#
Start
Field Administration T...
payroll - Microsoft Internet Explorer
Field Payroll Data Entry 1 010
Field Payroll System Help
Maintain Rates

The shortcut key for this function is F5

Personnel#: 801501 Rudiman
P
MECHANIC IN CHARGE
Ending:
Week#: 9 02/23/2002
Office/Company: 3210 0010

Double check that you have the correct employee and date.

Then, press the Time Ticket Entry button.

(Do that now.)

BACK
P01 (1) (010) morhp323 OVR 11:44AM
payroll - Microsoft Internet Explorer
Field Payroll Data Entry 2 020
Field Payroll System Help

Maintenance Service Time Ticket
Office: 3210 Name: Rudiman
Week#: 9 P
Ending: 02/23/2002

Bonus: 0.0 1.0x 0.0
Target: 0.0 1.5x 0.0
1.7x 0.0
2.0x 0.0
Tot: Exp: 12.00 Hrs: 0.0

Srch	Trn	Work Date	Type	Ord/CCtr	Act code	1.0xHrs	1.5xHrs	1.7xHrs	2.0xHrs	Proj
		021700	5	53047	50	8				

Now you will enter the employee's regular and overtime hours in the next four fields. Again, pressing Tab will jump the cursor to the next column.

Figure 11-9 This instructional program teaches office personnel how to enter data from a timecard into the computer program.

In addition, WBT can provide up-to-date content on any type of computer platform. Many Web sites offer WBT to the general public. Such training covers a wide range of topics, from how to change a flat tire to creating documents in Word. Many of these Web sites are free. Others ask you to register and pay a fee to take the complete Web-based course.

WBT, CBT, and other materials often are combined as materials for distance learning courses. **Distance learning** (**DL**), also called **distance education** (**DE**) or **online learning**, is the delivery of education at one location while the learning takes place at other locations. DL courses provide many time, distance, and place advantages for students who live far from a college campus or work full time. These courses enable students to attend class from anywhere in the world and at times that fit their schedules.

Many national and international companies offer DL training. These training courses eliminate the costs of airfare, hotels, and meals for centralized training sessions. For example, a global oil company may use a distance learning format to keep its personnel trained, regardless of where they are working (Figure 11-10). More than 70 percent of colleges and universities offer some form of distance learning (Figure 11-11). A few even offer entire degrees online.

Another form of CBT is edutainment. **Edutainment** is a type of educational software that combines education with entertainment. Many CD-ROMs and DVD-ROMs, such as the *Reader Rabbit* and *Carmen Sandiego* series, teach children in a fun and exciting way (Figure 11-12). Others, such as *Nascar Racing* and *Mavis Beacon Teaches Typing*, provide edutainment for computer users of all ages.

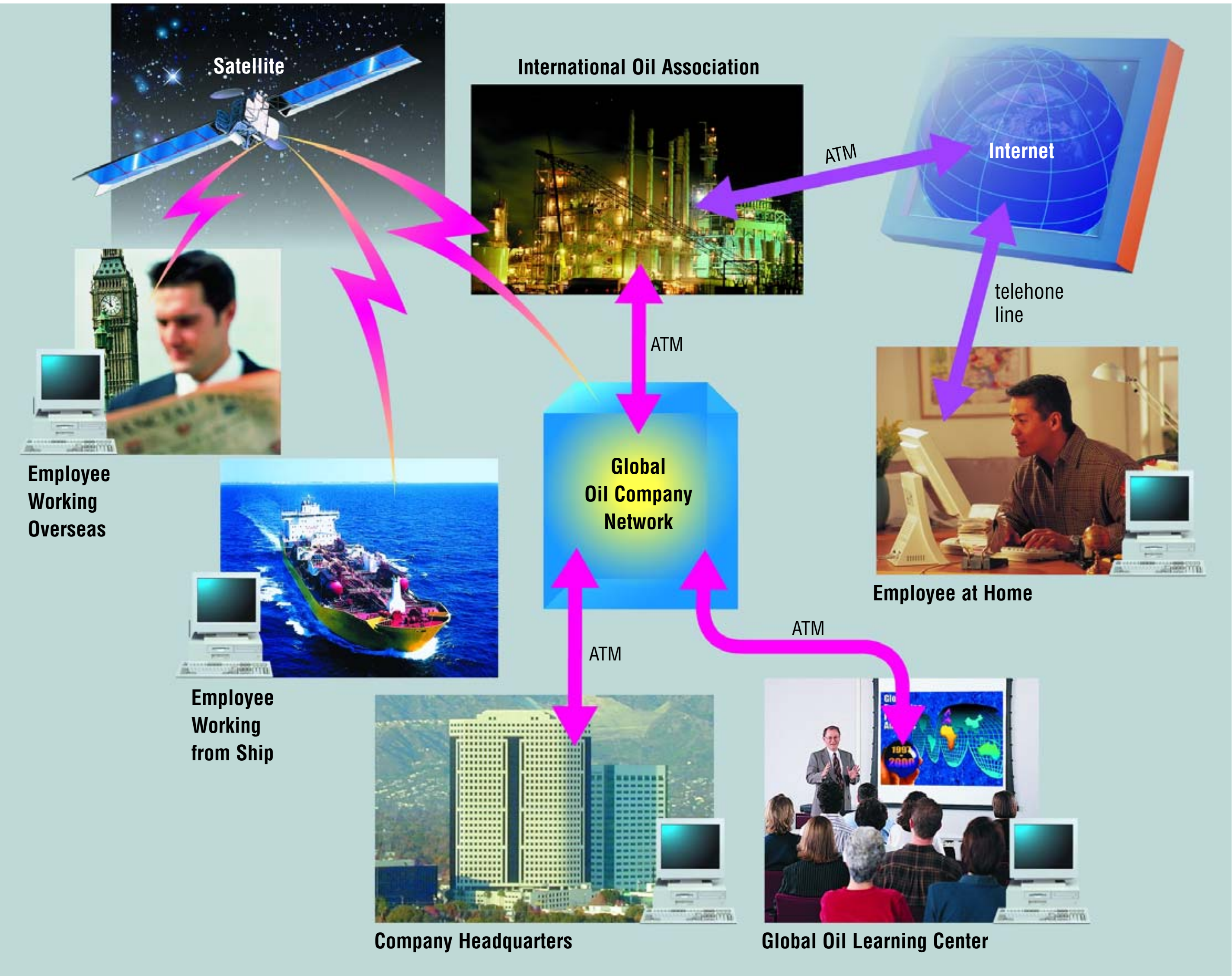
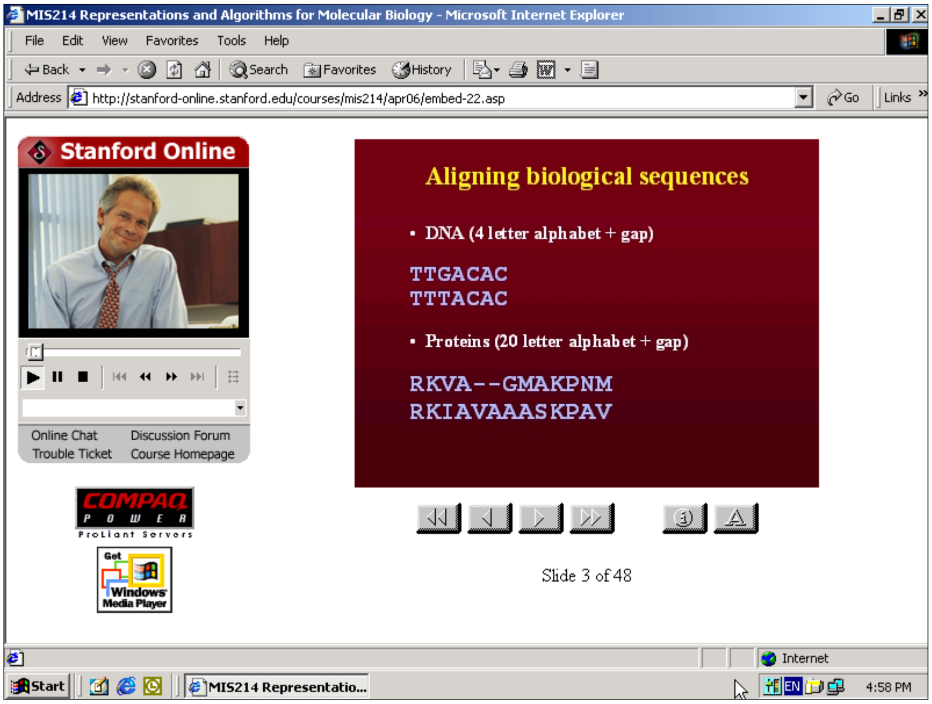


Figure 11-10 A global oil company may use the Internet and its own network to ensure that it can train personnel, regardless of where they are working.

Digital Divide

A major concern of the United States government and many citizens around the world is the digital divide. The digital divide is the idea that you can separate people of the world into two distinct groups: (1) those who have access to technology with the ability to use it and (2) those who do not have access to technology or are without the ability to use it. In this definition, technology includes items such as telephones, television, computers, and the Internet.

Some of the less fortunate people in the world are not able to take advantage of the very technology that makes much of our society prosper and grow. A recent study shows the 20 largest cities of the United States receive 86% of Internet delivery. Given this statistic, people living in cities have access to more technology than those living in rural areas. This is just one example of a digital divide.


MIS214 Representations and Algorithms for Molecular Biology - Microsoft Internet Explorer

Address: http://stanford-online.stanford.edu/courses/mis214/apr06/embed-22.asp

Aligning biological sequences

- DNA (4 letter alphabet + gap)

TTGACAC
TTTACAC

- Proteins (20 letter alphabet + gap)

RKVA--GMAKPNM
RKIAVAAASKPAV

Slide 3 of 48

Figure 11-11 Many colleges offer courses in a distance learning format.

Figure 11-12 Many edutainment applications entertain children while they learn.

COMPANY ON THE CUTTING EDGE

WebCT™
courses · campus · community

Enriching Learning Experiences

If you have taken online courses, chances are you have encountered WebCT.

This tool helps teachers develop sophisticated Internet learning environments for their classes. WebCT features educational and administrative tools, such as conferencing systems, chat rooms, e-mail, and group presentation areas, and a design interface that includes color schemes and layouts. More than 7 million students in 57 countries have WebCT accounts.

Murray Goldberg developed WebCT for his own use during his first year teaching in the computer science department at the University of British Columbia. He had earned bachelor's and master's degrees in computer science and wanted to combine his passion for this discipline with his love of teaching. WebCT enabled him to prepare his Web-based courses effectively and allowed his students to experience the richness of the Web.

The software was a success, and Goldberg won the University Teaching Prize during his first year on staff. He currently studies how students use and react to the World Wide Web.

For more information on WebCT, visit the Discovering Computers 2002 Companies Web page (**scsite.com/dc2002/companies.htm**) and click WebCT.

Some people refer to the digital divide as separating the *haves* from the *have-nots.* As shown in the table in Figure 11-13, a variety of *have* and *have-not* categories exist.

To narrow the gap in the digital divide, the United States government and many organizations have efforts underway. Microsoft and Toshiba launched an **Anytime Anywhere Learning program** that provides teachers and students with notebook computers equipped with the Microsoft Office suite and the capability to access the Internet. Microsoft has distributed more than 125,000 notebook computers in this program.

Gateway launched a Teach America! program that provides online computer training to 75,000 teachers. Gateway also donated 50,000 computers to **PowerUp**, a nationwide industry partnership whose goal is to place technology in schools and community centers. AOL offered 100,000 free Internet access accounts at PowerUp sites. Hewlett-Packard is investing $5 million into a building dedicated to provide technology training to low-income Californians. The Federal Communications Commission offered telephone service to Native Americans for $1 per month. The list goes on (Figure 11-14).

Society is attempting to make technology accessible to everyone, including those with disabilities.

SOCIETY'S GOAL: TO BRIDGE THE DIGITAL DIVIDE

Haves (have access to technology and have the ability to use it)
• Cities
• Educated people
• Upper income families
• More industrially developed nations
• Nonminority neighborhoods
• People without disabilities

Figure 11-13 The digital divide recognizes that some of the less fortunate people in the world are not able to take advantage of technology. Society's goal is to narrow the gap, or bridge the divide, between the haves and have-nots.

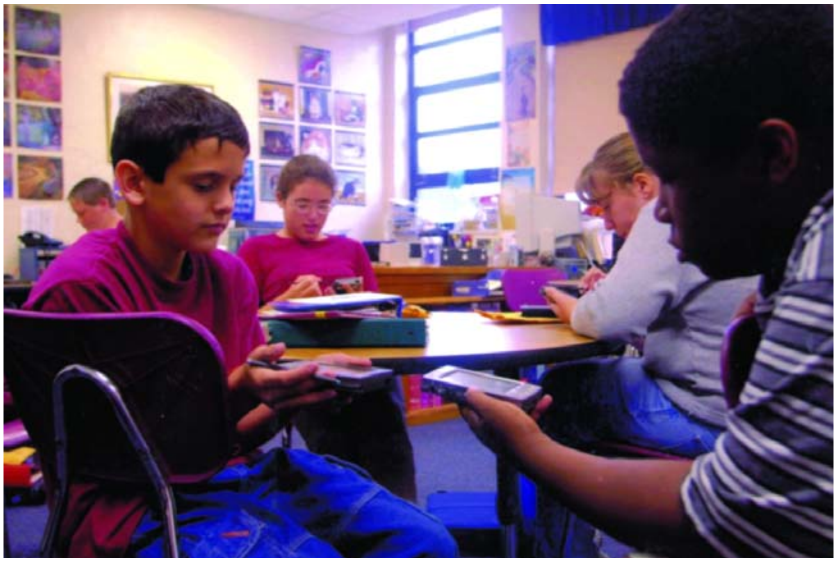


Figure 11-14 These junior high school students use handheld computers to take notes, download assignments, write papers, and relay information to and from each other's computers.

ISSUE

A Storm of Change

Education

Many educators praise the use of technology in education. We now see computers moving from computer labs to the classroom. Computer-based training (CBT) is all the rage and appears to be the answer for many students, especially those that need extra help. On the other hand, another group of educators vehemently disagree with CBT. They argue no evidence exists to support CBT, and this flood of technology into the classroom may be detracting from basic subjects. What is your opinion of CBT? Do you think it is effective? Why or why not?

Distance learning (DL) is another hotly debated educational topic. The following findings are from research reports comparing traditional learning with online learning: "There were no significant differences in the test scores for the classes measured and more than 85 percent of faculty felt that student learning outcomes in online education were comparable or better to those found in face-to-face classrooms." Do you agree with these findings? Does a college degree earned online have the same educational value as one earned in the classroom? Can one learn as much in an online course as in a traditional course?

For more information on education, computer-based training, and distance learning, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #2.

Due to the efforts of many public and private organizations, blind or visually impaired people can have Web pages read out loud. Web pages can display captions for deaf and hard-of-hearing individuals. Those with significant disabilities can type or control a pointer on the screen with eye movements and brain waves. These amazing technologies are becoming available in schools, work, and home environments so that people with disabilities may have equal access to computers and the Internet.

Entertainment

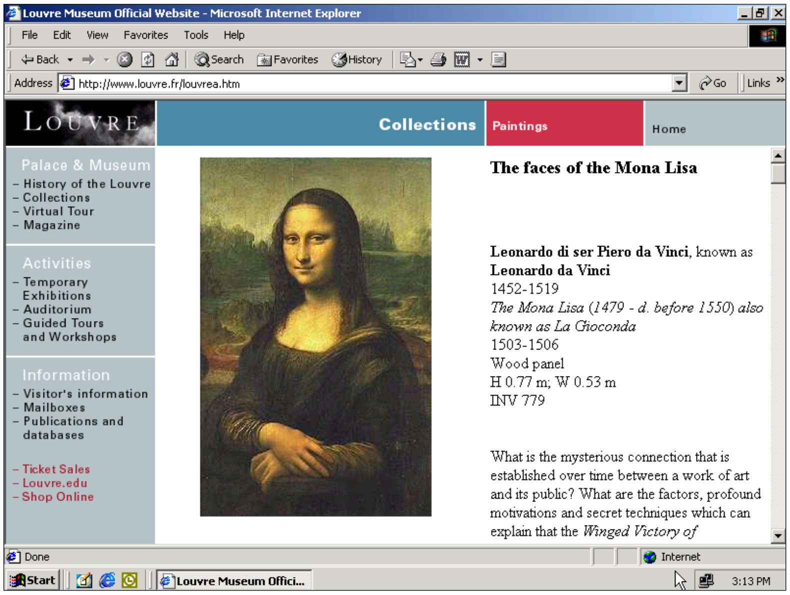
In the past, you played board games with friends and family members, viewed fine art in an art gallery, listened to music on your stereo, watched a movie at a theater or on television, and inserted pictures into sleeves of photo albums. Today, you can have a much more fulfilling experience in each of these areas of entertainment.

In addition to playing exciting, action-packed, 3-D multiplayer games, you can find hours of entertainment on the computer. For example, you can make a family tree, read a book or magazine online, listen to music on the computer, watch a video or movie on the computer, compose a video, edit photographs, plan a vacation, and countless other activities. These forms of entertainment are available on CD-ROM, DVD-ROM, and also on the Web.

On the Web, you can view images of fine art in online museums, galleries, and centers (Figure 11-15). Some artists sell their works online. Others display them for your viewing pleasure.

Have Nots
(do not have access to technology or do not have the ability to use it)

- Rural areas
- Uneducated people
- Lower income families
- Less industrially developed nations
- Minority neighborhoods
- People with disabilities



The faces of the Mona Lisa

Leonardo di ser Piero da Vinci, known as **Leonardo da Vinci**
1452-1519
The Mona Lisa (1479 - d. before 1550) also known as La Gioconda
1503-1506
Wood panel
H 0.77 m; W 0.53 m
INV 779

What is the mysterious connection that is established over time between a work of art and its public? What are the factors, profound motivations and secret techniques which can explain that the *Winged Victory of*

Figure 11-15 Fine art galleries, such as the Louvre, display works online for your enjoyment.

ISSUE

How Big Is the Gap?

Digital Divide

For many, the Internet has ushered in the greatest period of wealth creation in history. Those without Internet access are not quite so fortunate because they are on the other side of the digital divide. This group has less opportunity to take part in our new information-based economy in which many jobs are related to computers. These individuals also have less opportunity to participate in other online educational and online training activities. Does the digital divide exist? How big is the divide? What groups are most likely to be affected by the divide? What can be done to help individuals cross the divide? Is this problem confined to the United States or is it global? Will technology-rich countries continue to thrive even more because of the divide?

For more information on the digital divide, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #3.

You have several options if you wish to listen to music while working on the computer. Insert your favorite music CD into the CD or DVD drive on your computer and listen while you work. Visit an online radio station to hear music (Figure 11-16), news, and sporting events. At some of these sites, you even can watch videos of artists as they sing or play their songs.

Instead of driving to the music store or video store to purchase music or movies, you can buy them on the Web. After paying for the music or movie online, you download it to your hard disk. Once on your hard disk, you listen to the music or watch the movie on the computer. Or, you can transfer it to a CD using a CD-RW and play the music on any audio CD player or the movie on a DVD player.

Some people prefer to create their own music or movies. You can compose music and other sound effects using external devices such as an electric piano keyboard or synthesizer. You also can transfer or create movies by connecting a video camera to the computer. Once on the computer, the music or movies are ready for editing, e-mailing, or posting to a Web page.

Instead of creating digital music or movies, you may wish to create digital photographs. A **digital camera** allows you to take pictures and store the photographed images digitally, instead of on traditional film. Digital cameras can save the expense of film developing, duplication, and postage. You can share digital images with family, friends, co-workers, and clients by posting the photographs on a Web site or e-mailing them. You also can add dazzling special effects and print multiple copies of an image from the comfort of your home or office.

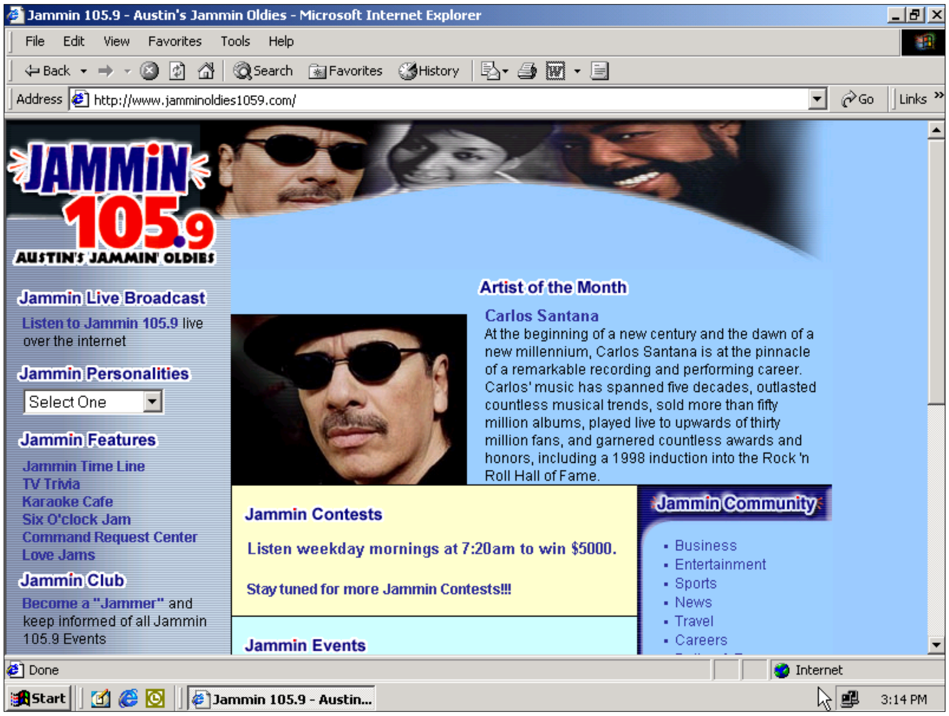
ISSUE

Do Computers Promote Violence?

Entertainment

Video games have come a long way. Years ago people manipulated crude graphics on a dim screen and heard a few clicks and beeps when moving around a joystick. Thanks to sophisticated technology, video games now feature realistic, full screen displays, and ergonomically-styled controls. Many of the more popular video games include violence. Opponents claim exposure to such games during a period of time desensitizes individuals to the reality of violence. They also argue an increase in aggression is another effect of violent video games. Do you agree with these statements? Can someone spend too much time playing games? Should video games be rated?

For more information on computer entertainment and video games, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #4.



Listen to Jammin 105.9 live over the internet

At the beginning of a new century and the dawn of a new millennium, Carlos Santana is at the pinnacle of a remarkable recording and performing career. Carlos' music has spanned five decades, outlasted countless musical trends, sold more than fifty million albums, played live to upwards of thirty million fans, and garnered countless awards and honors, including a 1998 induction into the Rock 'n Roll Hall of Fame.

Listen weekday mornings at 7:20am to win $5000.

Stay tuned for more Jammin Contests!!!

Become a "Jammer" and keep informed of all Jammin 105.9 Events

Figure 11-16 Many radio stations have online broadcasts for your listening pleasure.

E-Commerce

Electronic commerce, also know as **e-commerce**, is a financial business transaction that occurs over an electronic network such as the Internet. Anyone with access to a computer, an Internet connection, and a means to pay for purchased goods or services can participate in e-commerce (Figure 11-17). In the past, e-commerce transactions were conducted primarily through desktop computers. Today, many mobile computers and devices also can access the Web wirelessly. These include notebook computers, handheld computers, pagers, and cellular telephones.

E-commerce has changed the way businesses conduct business. It virtually eliminates the barriers of time and distance that slow traditional transactions. Now, with e-commerce, transactions can occur instantaneously and globally. This saves time for participants on both ends.

One of the most popular uses of e-commerce is shopping. You can purchase just about any good or service on the Web. Examples include flowers, books, groceries, computers, prescription drugs, music, movies, cars, airline tickets, and concert tickets.

Address http://www.us.buy.com/business/default.asp

buy.com
the internet superstore

How Messy is Your Office?
Enter buy.com's "Messiest Office" contest and you could win a $5,000 buy.com gift certificate. Send in a picture of your messy office along with a written explanation of how winning the contest will help you get organized.
Control. Get more in our Get Organized Store.

WebConnections
Get your office online with IBM and get 2 months FREE.

Business Accounts
Improve your cash flow with a revolving or terms account.

Figure 11-17 To participate in e-commerce, you need a computer that has Internet access and a means to pay for purchased goods or services.

Users purchase items through an electronic storefront or an online auction. A customer visits the online business through its electronic storefront. An **electronic storefront** contains descriptions, graphics, and a shopping cart. A **shopping cart** allows you to collect purchases (Figure 11-18a). When ready to complete the sale, the customer enters personal and financial data through a secure Web connection. With an **online auction**, you bid on an item (Figure 11-18b). The highest bidder at the end of the bidding period purchases the item.

In the past, merchants shipped goods to a specified location such as your house. Today, merchants can deliver some items directly to your handheld computer or device such as a cellular telephone or pager. For example, you can purchase a movie ticket on the Web and store the ticket on your handheld computer. When you wish to see the movie, a device at the movie theater wirelessly collects the ticket from your handheld device. Airline tickets, event tickets, train tickets, and coupons are just a few other examples of uses of this short range wireless communications technology, called **Bluetooth**™.

Another popular e-commerce activity is managing finances. The next section discusses this activity.

Finance

Many people today use computers to help them manage their finances (Figure 11-19). Some use **personal finance software** to balance their checkbook, pay bills, track personal income and expenses, track investments, and evaluate financial plans. Most of these packages offer a variety of online services. For example, you can track investments online, compare insurance rates from leading insurance companies, and do online banking. With **online banking**, you transfer money electronically from your account to a payee's account or download monthly transactions from the Web right into your computer.

ISSUE

The Digital Economy

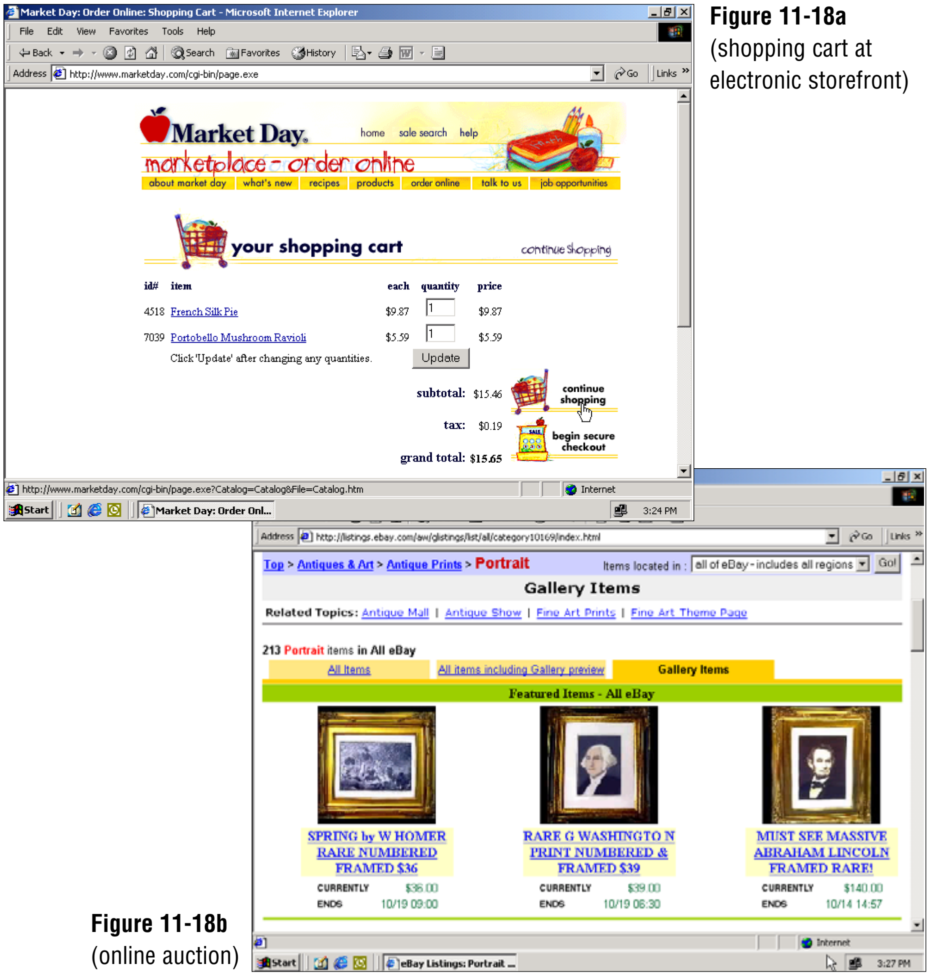
E-Commerce

During the past few years, the United States economy has performed beyond most expectations. Many economists contribute much of this growth to the Internet and the emergence of e-commerce. Do you agree that the Internet has contributed to the economic growth? Can e-commerce continue to drive economic growth in the future? Or, are we witnessing the end of the dot-com revolution? Is e-commerce positive or negative for the American worker? Could it lead to mass unemployment? If so, how? Will the nature of jobs change? In what way?

For more information on e-commerce, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #5.

Web Link

For more information on Bluetooth™, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Bluetooth™.


Market Day: Order Online: Shopping Cart - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://www.marketday.com/cgi-bin/page.exe
Go Links
Market Day
home sale search help
marketplace - order online
about market day what's new recipes products order online talk to us job opportunities
your shopping cart
continue shopping

id#	item	each	quantity	price
4518	French Silk Pie	$9.87	1	$9.87
7039	Portobello Mushroom Ravioli	$5.59	1	$5.59

Click 'Update' after changing any quantities.

subtotal: $15.46
tax: $0.19
grand total: $15.65

Update
continue shopping
begin secure checkout
http://www.marketday.com/cgi-bin/page.exe?Catalog=Catalog&File=Catalog.htm
Internet
Start
Market Day: Order Onl...
3:24 PM

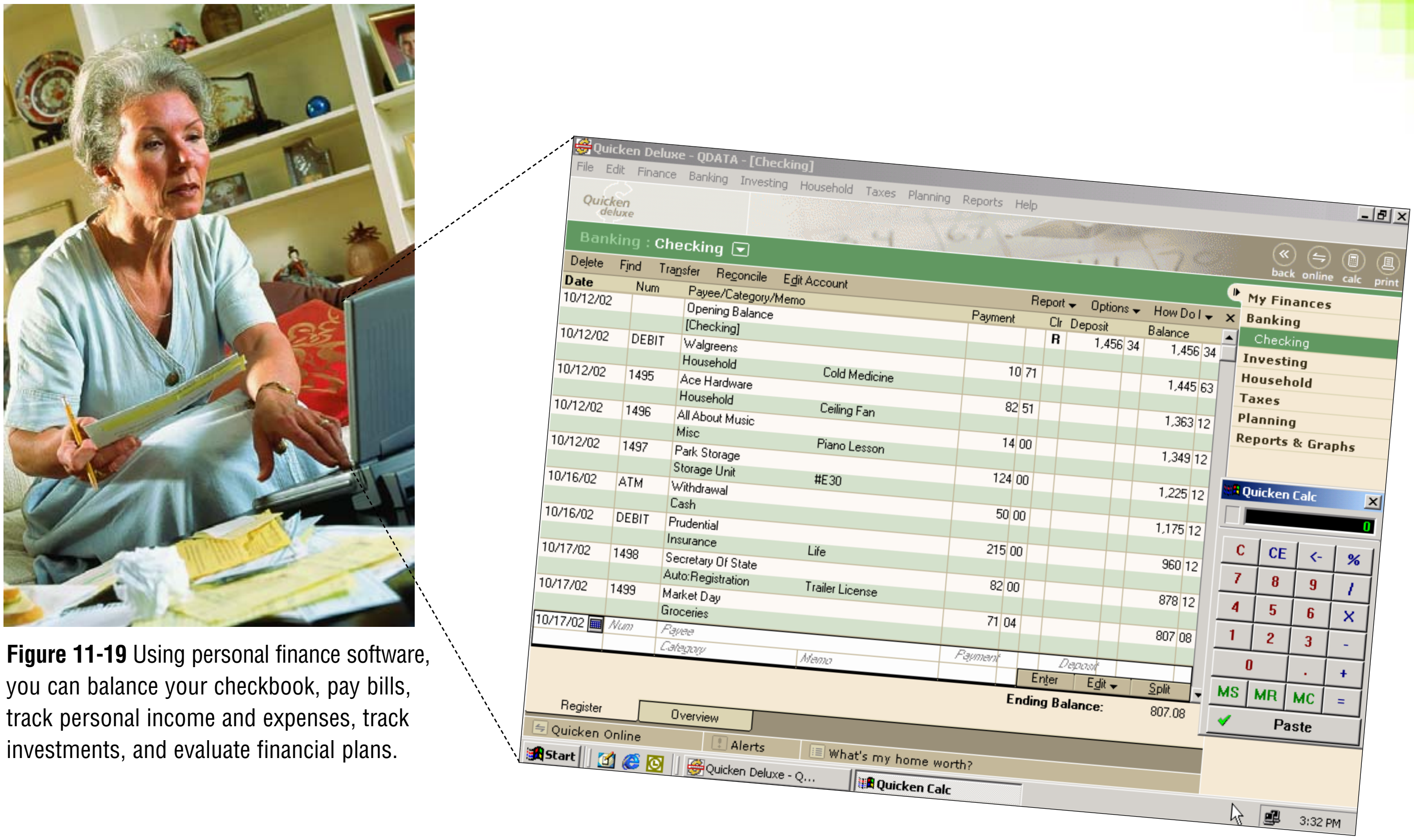
Figure 11-18a (shopping cart at electronic storefront)

Address http://listings.ebay.com/aw/glistings/list/all/category10169/index.html
Top > Antiques & Art > Antique Prints > Portrait
Items located in : all of eBay - includes all regions
Go!
Gallery Items
Related Topics: Antique Mall | Antique Show | Fine Art Prints | Fine Art Theme Page
213 Portrait items in All eBay
All Items
All items including Gallery preview
Gallery Items
Featured Items - All eBay

SPRING by W HOMER RARE NUMBERED FRAMED $36	RARE G WASHINGTO N PRINT NUMBERED & FRAMED $39	MUST SEE MASSIVE ABRAHAM LINCOLN FRAMED RARE!
CURRENTLY $36.00	CURRENTLY $39.00	CURRENTLY $140.00
ENDS 10/19 09:00	ENDS 10/19 06:30	ENDS 10/14 14:57

Figure 11-18b (online auction)

Figure 11-18 A shopping cart at an electronic storefront and an online auction.



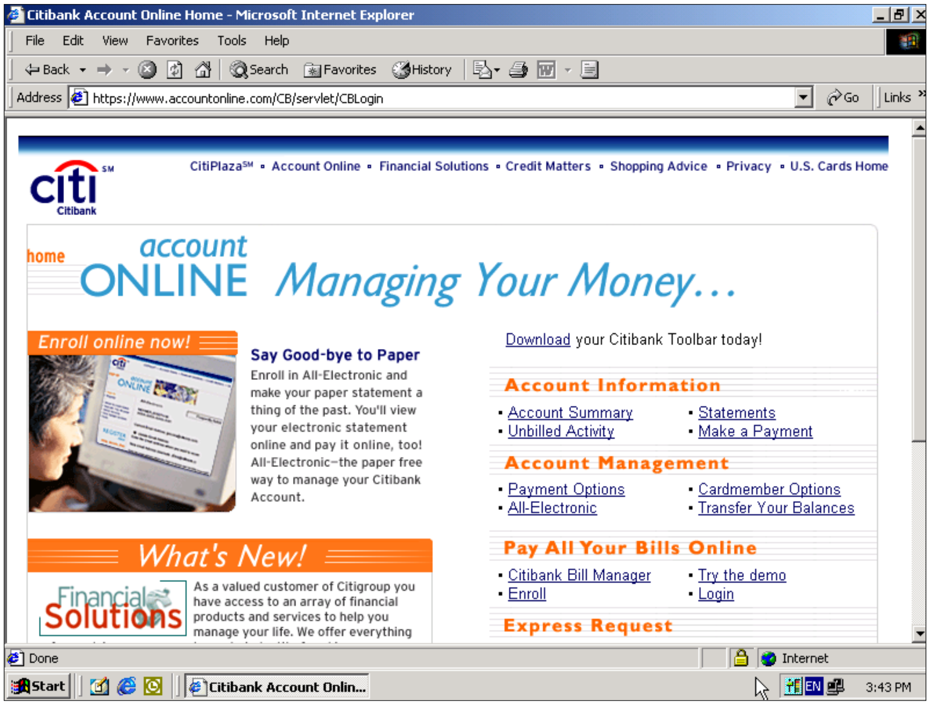
Date	Num	Payee/Category/Memo		Payment	Clr	Deposit	Balance
10/12/02		Opening Balance [Checking]			R	1,456 34	1,456 34
10/12/02	DEBIT	Walgreens Household	Cold Medicine	10 71			1,445 63
10/12/02	1495	Ace Hardware Household	Ceiling Fan	82 51			1,363 12
10/12/02	1496	All About Music Misc	Piano Lesson	14 00			1,349 12
10/12/02	1497	Park Storage Storage Unit	#E30	124 00			1,225 12
10/16/02	ATM	Withdrawal Cash		50 00			1,175 12
10/16/02	DEBIT	Prudential Insurance	Life	215 00			960 12
10/17/02	1498	Secretary Of State Auto:Registration	Trailer License	82 00			878 12
10/17/02	1499	Market Day Groceries		71 04			807 08
10/17/02	Num	Payee Category	Memo	Payment		Deposit	

Enter Edit Split

Ending Balance: 807.08

Figure 11-19 Using personal finance software, you can balance your checkbook, pay bills, track personal income and expenses, track investments, and evaluate financial plans.

Many financial institutions offer Web-based online banking. The difference between these Web sites and personal finance software is all your account information is stored on the bank's computer. The advantage is you can access your information from anywhere in the world. From these Web sites, you can transfer money electronically to payees' accounts and view current statements and account balances (Figure 11-20).


Citibank Account Online Home - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address
Go Links
citi Citibank
CitiPlaza℠ • Account Online • Financial Solutions • Credit Matters • Shopping Advice • Privacy • U.S. Cards Home
home
account ONLINE Managing Your Money…
Enroll online now!
What's New!
Financial Solutions
Done Internet
Start Citibank Account Onlin...
3:43 PM

Address https://www.accountonline.com/CB/servlet/CBLogin

Say Good-bye to Paper

Enroll in All-Electronic and make your paper statement a thing of the past. You'll view your electronic statement online and pay it online, too! All-Electronic–the paper free way to manage your Citibank Account.

As a valued customer of Citigroup you have access to an array of financial products and services to help you manage your life. We offer everything

Download your Citibank Toolbar today!

Account Information
- Account Summary
- Unbilled Activity
- Statements
- Make a Payment

Account Management
- Payment Options
- All-Electronic
- Cardmember Options
- Transfer Your Balances

Pay All Your Bills Online
- Citibank Bill Manager
- Enroll
- Try the demo
- Login

Express Request

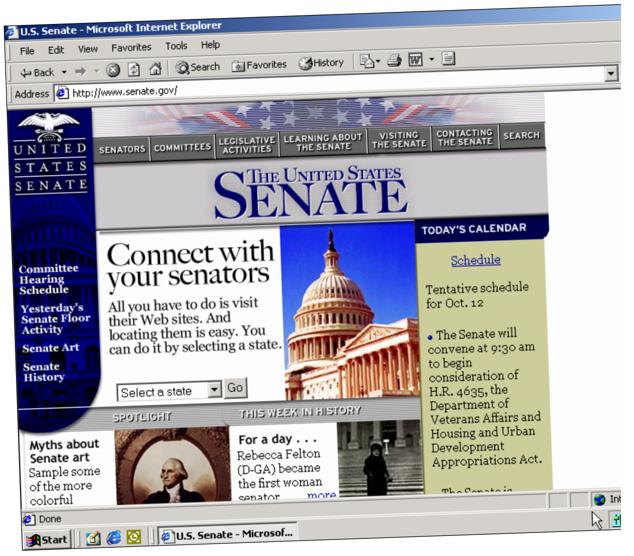
Figure 11-20 Many financial institutions offer Web-based online banking. For example, at Citibank Account Online, you can view credit card transactions, make a payment, view a statement, pay bills, and transfer balances.

Many of these Web-based financial institutions also allow you to transfer funds from one individual to another. Using a computer or Web-enabled cellular telephone, you can transfer money from your credit card, debit card, or checking account to another person's credit card or bank account. Individuals use this service for monetary gifts. Companies use it for rebates and refunds.

One of the fastest growing financial Web-based applications is online stock trading (Figure 11-21). With **online stock trading**, you can buy and sell stocks online — without using a broker. Many investors prefer online stock trading because the transaction fee for each trade usually is substantially less than when you trade through a broker.

Government

A government provides society with direction by making and administering policies. Many people associate government with executive, judicial, and legislative offices. The United States government also includes areas such as law enforcement, employment, military, national security, and taxes. To provide citizens with up-to-date information, most government offices have Web sites (Figure 11-22). A recent survey estimated that about 62 percent of people in the United States access online government Web sites.



http://www.senate.gov/

Connect with your senators

All you have to do is visit their Web sites. And locating them is easy. You can do it by selecting a state.

Myths about Senate art
Sample some of the more colorful

For a day . . .
Rebecca Felton (D-GA) became the first woman senator ... more

Tentative schedule for Oct. 12

- The Senate will convene at 9:30 am to begin consideration of H.R. 4635, the Department of Veterans Affairs and Housing and Urban Development Appropriations Act.

Figure 11-22 Most United States government offices have Web sites that provide you with information.

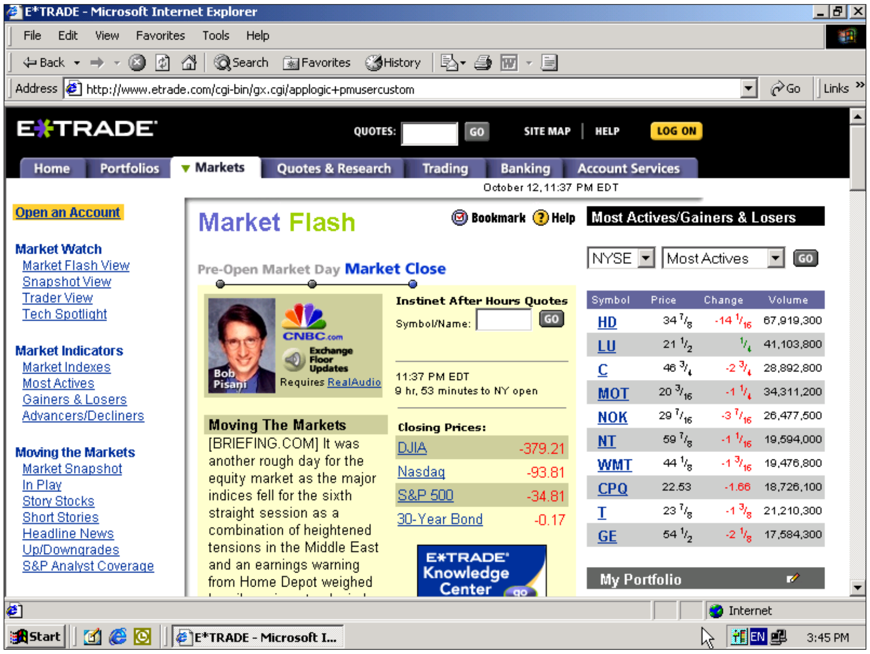
ISSUE

Online Trading

Finance

The online brokerage industry is growing up — but has it fully matured? An investment club, for example, uses an online firm to purchase stock options, betting the company's stock will increase the following day. The stock skyrockets more than 200 percent. The club decides to sell, but finds the Web site for the online firm has crashed. By the time they make contact, they lose 75 percent of their investment. Should the online firm be responsible for this loss? Is eliminating human-to-human contact within the area of finance a good feature? What about online security and privacy issues? How do you know your privacy is protected? Should online companies with whom you do business be able to sell your personal data?

For more information on finance and online trading, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #6.



http://www.etrade.com/cgi-bin/gx.cgi/applogic+pmusercustom

October 12, 11:37 PM EDT

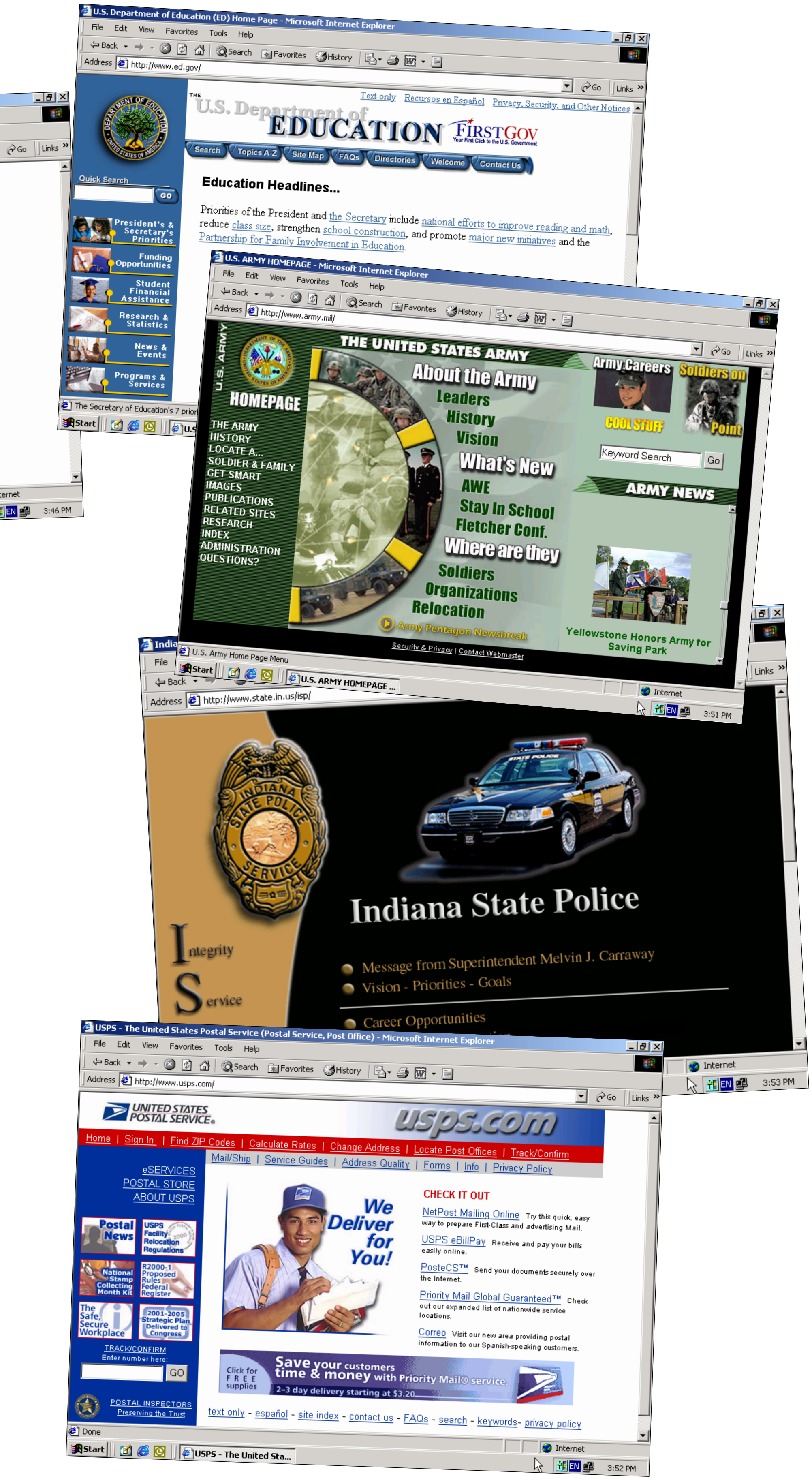
11:37 PM EDT
9 hr, 53 minutes to NY open

Moving The Markets
[BRIEFING.COM] It was another rough day for the equity market as the major indices fell for the sixth straight session as a combination of heightened tensions in the Middle East and an earnings warning from Home Depot weighed

Closing Prices:	
DJIA	-379.21
Nasdaq	-93.81
S&P 500	-34.81
30-Year Bond	-0.17

Symbol	Price	Change	Volume
HD	$34\ ^{7}/_{8}$	$-14\ ^{1}/_{16}$	67,919,300
LU	$21\ ^{1}/_{2}$	$^{1}/_{4}$	41,103,800
C	$46\ ^{3}/_{4}$	$-2\ ^{3}/_{4}$	28,892,800
MOT	$20\ ^{3}/_{16}$	$-1\ ^{1}/_{4}$	34,311,200
NOK	$29\ ^{7}/_{16}$	$-3\ ^{7}/_{16}$	26,477,500
NT	$59\ ^{7}/_{8}$	$-1\ ^{1}/_{16}$	19,594,000
WMT	$44\ ^{1}/_{8}$	$-1\ ^{3}/_{16}$	19,476,800
CPQ	22.53	-1.66	18,726,100
T	$23\ ^{7}/_{8}$	$-1\ ^{3}/_{8}$	21,210,300
GE	$54\ ^{1}/_{2}$	$-2\ ^{1}/_{8}$	17,584,300

Figure 11-21 E*Trade is a popular online trading application.


U.S. Department of Education (ED) Home Page - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://www.ed.gov/
Go Links
Text only Recursos en Español Privacy, Security, and Other Notices
THE U.S. Department of EDUCATION
FIRSTGOV Your First Click to the U.S. Government
Search Topics A-Z Site Map FAQs Directories Welcome Contact Us
Quick Search GO
President's & Secretary's Priorities
Funding Opportunities
Student Financial Assistance
Research & Statistics
News & Events
Programs & Services
The Secretary of Education's 7 prior
Start
U.S. ARMY HOMEPAGE - Microsoft Internet Explorer
Address http://www.army.mil/
U.S. ARMY
HOMEPAGE
THE UNITED STATES ARMY
About the Army
Leaders
History
Vision
What's New
AWE
Stay In School
Fletcher Conf.
Where are they
Soldiers
Organizations
Relocation
Army Pentagon Newsbreak
Army Careers
Soldiers on Point
COOL STUFF
Keyword Search Go
ARMY NEWS
Yellowstone Honors Army for Saving Park
THE ARMY
HISTORY
LOCATE A...
SOLDIER & FAMILY
GET SMART
IMAGES
PUBLICATIONS
RELATED SITES
RESEARCH
INDEX
ADMINISTRATION
QUESTIONS?
Security & Privacy | Contact Webmaster
U.S. Army Home Page Menu
Start U.S. ARMY HOMEPAGE ...
Internet 3:51 PM
Address http://www.state.in.us/isp/
INDIANA STATE POLICE SERVICE
Indiana State Police
Integrity
Service
Message from Superintendent Melvin J. Carraway
Vision - Priorities - Goals
Career Opportunities
Internet 3:53 PM
3:46 PM
USPS - The United States Postal Service (Postal Service, Post Office) - Microsoft Internet Explorer
Address http://www.usps.com/
UNITED STATES POSTAL SERVICE
usps.com
Home | Sign In | Find ZIP Codes | Calculate Rates | Change Address | Locate Post Offices | Track/Confirm
Mail/Ship | Service Guides | Address Quality | Forms | Info | Privacy Policy
eSERVICES
POSTAL STORE
ABOUT USPS
Postal News
USPS Facility Relocation Regulations
National Stamp Collecting Month Kit
R2000-1 Proposed Rules Federal Register
The Safe, Secure Workplace
2001-2005 Strategic Plan Delivered to Congress
TRACK/CONFIRM
Enter number here: GO
POSTAL INSPECTORS Preserving the Trust
We Deliver for You!
CHECK IT OUT
Click for FREE supplies
Save your customers time & money with Priority Mail® service.
2-3 day delivery starting at $3.20
text only - español - site index - contact us - FAQs - search - keywords - privacy policy
Done
Start USPS - The United Sta...
Internet 3:52 PM

Education Headlines...

Priorities of the President and the Secretary include national efforts to improve reading and math, reduce class size, strengthen school construction, and promote major new initiatives and the Partnership for Family Involvement in Education.

NetPost Mailing Online Try this quick, easy way to prepare First-Class and advertising Mail.

USPS eBillPay Receive and pay your bills easily online.

PosteCS™ Send your documents securely over the Internet.

Priority Mail Global Guaranteed™ Check out our expanded list of nationwide service locations.

Correo Visit our new area providing postal information to our Spanish-speaking customers.

APPLY IT!

Your Government

Are you interested in a particular piece of federal, state, or local legislation and would like to know the status or other information about this matter? Do you have a political issue on which you would like to express your opinion to a local or state government representative? Perhaps you would like to contact a member of Congress for your state. Or, maybe you want to go straight to the top and send a message to the President of the United States. Not too many years ago, these were somewhat difficult tasks. The Internet changed all that. Today, Web sites exist for most government agencies. They provide a gateway to legislation and other relevant information. Contacting a government official is as simple as sending an e-mail message. The key to all of this is knowing the Web sites, URLs, and the e-mail addresses of the officials whom you wish to contact.

- The National Political Index (see URL below) provides a comprehensive index and links to more than 3,500 local, state, and government Web sites.
- The Contacting the Congress site (see URL below) provides resources on Congress and other federal government agencies. You can find e-mail addresses for all members of Congress and other federal agencies.
- To contact a senator, or find more information about the Senate, try The United States Senate site (see URL below).
- The Thomas Legislative Information site (see URL below) provides up-to-date information on legislative activity.
- At the Whitehouse site (see URL below), you will find information on how to contact the President, Vice President, their spouses, and links to other federal agencies.
- The Library of Congress (see URL below) provides a meta index for state and local government information as well as links to the Library of Congress.

For more information on government agencies and the Web sites mentioned above, visit the Discovering Computers 2002 Apply It Web page (**scsite.com/dc2002/apply.htm**) and click Chapter 11 Apply It #1.

In addition to providing information via computers, employees of government agencies use computers as part of their daily routine (Figure 11-23). North American 911 call centers use computers to dispatch calls for fire, police, and medical assistance. Law enforcement officers have online access to the FBI's National Crime Information Center (NCIC) through the police cars equipped with computers and fingerprint scanners. The NCIC contains more than 10 million criminal records, including names, fingerprints, parole/probation records, mug shots, and other pertinent information.

More than 210 million Americans interact with the government every year. They file taxes, apply for permits and licenses, pay parking tickets, buy stamps, and renew automobile registrations and driver's licenses. Some companies provide these government services on the Web, allowing the public to complete these transactions online (Figure 11-24).

ISSUE

How Secure Is Your Privacy?

Government Records

Government records within a democratic society are public. Virtually every major change in life is recorded somewhere in a government document. Shortly after you are born, a birth certificate is issued; if you get married or divorced, buy a house, file a lawsuit, all of these events are recorded in public documents. Noncertified copies of these documents are available to anyone. Should there be a restriction on the release of these records? If so, what type of restriction? What about your Social Security number? This is the most frequently used record keeping number in the United States and often is used as your ID in a wide variety of databases. Should you be required to provide your Social Security number to companies? Federal law states that, unless certain circumstances prevail, you are not required to provide your Social Security number to private businesses. Should a private business have the right to refuse to provide you with service if you do not give them the number?

For more information on government records and privacy, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #7.

Figure 11-23a (911 call center operators)

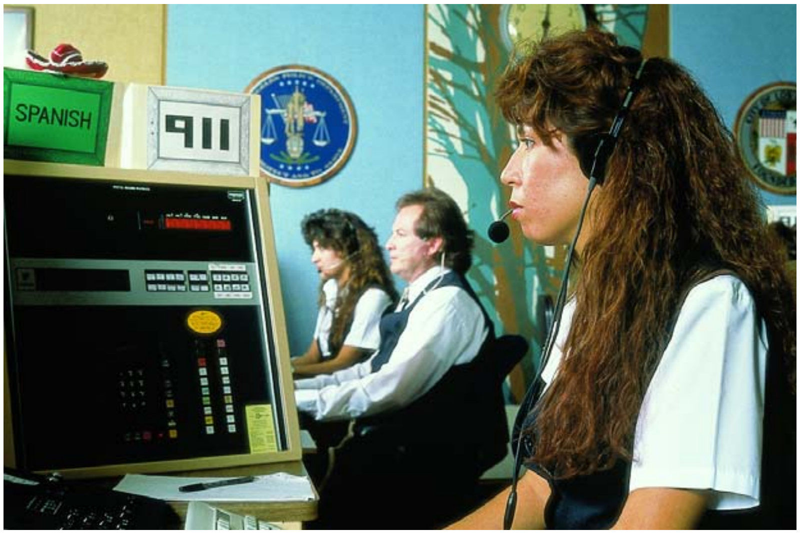


Figure 11-23b (law enforcement officer)

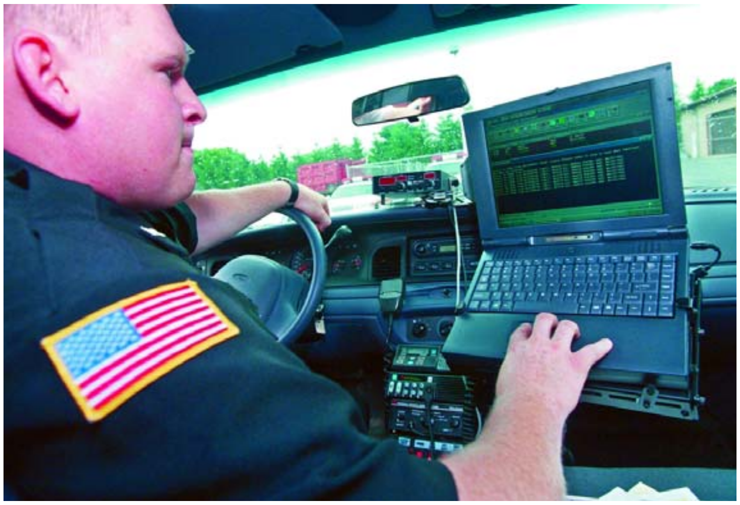
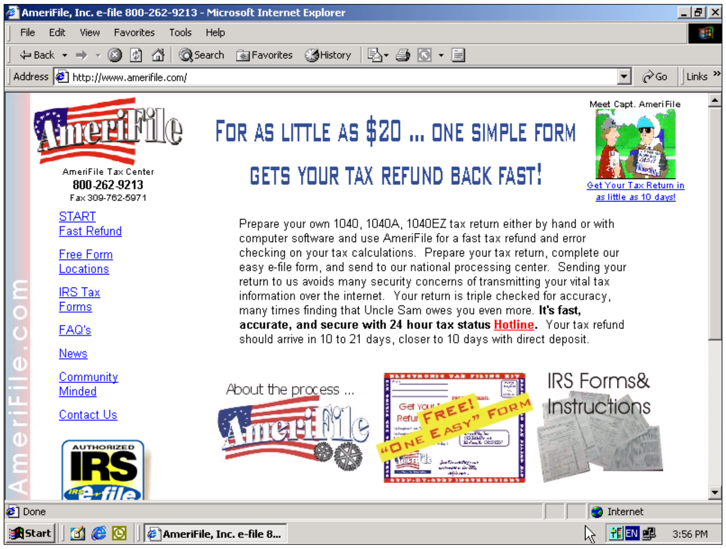


Figure 11-23 Many government employees use computers.


AmeriFile, Inc. e-file 800-262-9213 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://www.amerifile.com/
Go Links
AmeriFile
AmeriFile Tax Center
800-262-9213
Fax 309-762-5971
START
Fast Refund
Free Form Locations
IRS Tax Forms
FAQ's
News
Community Minded
Contact Us
AUTHORIZED IRS e-file
AmeriFile.com
FOR AS LITTLE AS $20 ... ONE SIMPLE FORM GETS YOUR TAX REFUND BACK FAST!
Meet Capt. AmeriFile
Get Your Tax Return in as little as 10 days!
About the process ...
FREE! "ONE EASY" FORM
IRS Forms& Instructions
Done
Internet
Start
AmeriFile, Inc. e-file 8...
3:56 PM

Prepare your own 1040, 1040A, 1040EZ tax return either by hand or with computer software and use AmeriFile for a fast tax refund and error checking on your tax calculations. Prepare your tax return, complete our easy e-file form, and send to our national processing center. Sending your return to us avoids many security concerns of transmitting your vital tax information over the internet. Your return is triple checked for accuracy, many times finding that Uncle Sam owes you even more. **It's fast, accurate, and secure with 24 hour tax status Hotline.** Your tax refund should arrive in 10 to 21 days, closer to 10 days with direct deposit.

Figure 11-24 This Web site allows you to file income taxes.

Health Care

Nearly every aspect of the medical field uses computers (Figure 11-25). Whether you are visiting a family physician for a regular checkup, having lab work or an outpatient test, or being rushed in for emergency surgery, the medical staff around you will be using computers for various purposes:

- Hospitals and doctors maintain patient records on computers.
- Computers monitor patients' vital signs in hospital rooms and at home.
- Doctors use the Web and specialized medical software to assist them in research and diagnosing medical conditions.
- Pharmacists use computers to file insurance claims.
- Computers and computerized devices assist doctors, nurses, and technicians with medical tests.
- Doctors use e-mail to communicate with patients.
- Surgeons implant computerized devices, such as pacemakers, that allow patients to live longer lives.
- Surgeons use computer-controlled devices to provide them with greater precision during operations, such as for laser eye surgery and robot-assisted heart surgery.

Another exciting development in the medical field is telemedicine. As a result of joint efforts of medical societies, the government, communications companies, and Internet service providers, **telemedicine** affords health-care professionals and consumers access to medical care through computers with videoconferencing capabilities.

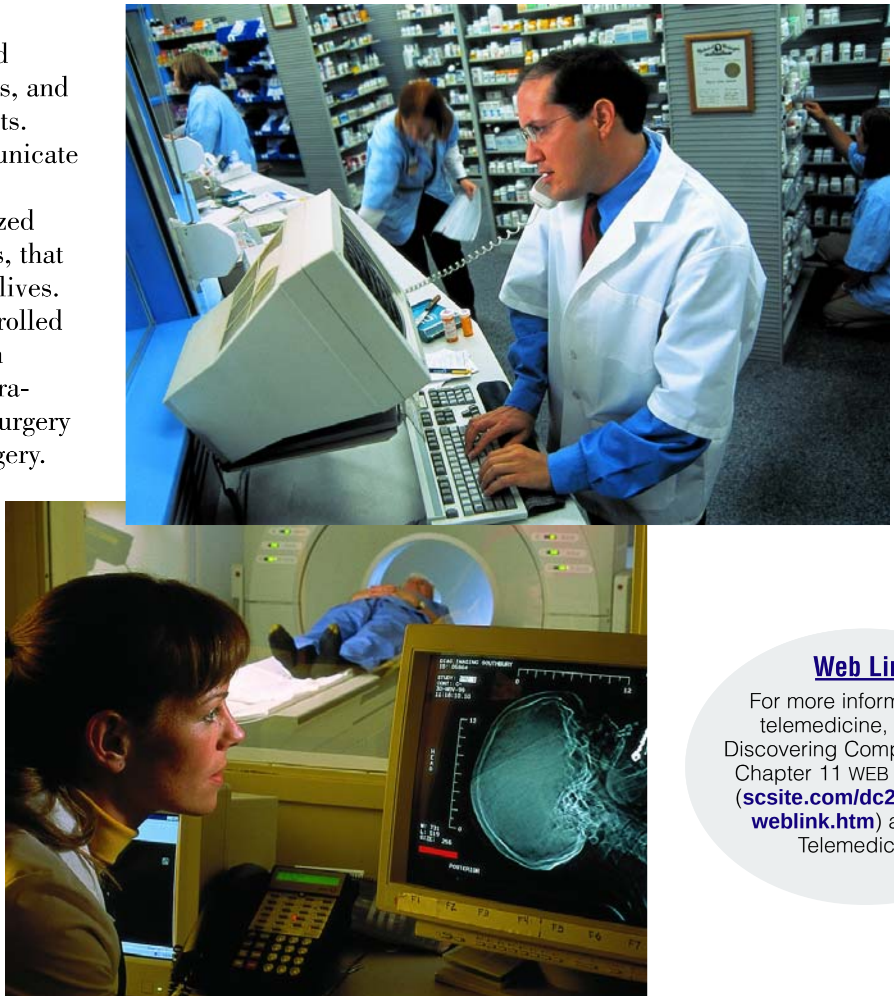


Figure 11-25 Nearly every aspect of the medical field uses computers. Shown here is a pharmacist checking patient records and a lab technician monitoring an MRI.

Web Link

For more information on telemedicine, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Telemedicine.

As shown in Figure 11-26, a doctor at one location can have a videoconference with a doctor at another location to discuss a bone x-ray, which also displays on the computer screen. In essence, telemedicine is long-distance health care. Areas such as medical training, research, collaboration, decision making, and treatment are using telemedicine.

Prior to performing surgery on live humans, many surgeons use computer-aided surgery while they are in training. **Computer-aided surgery** (**CAS**) involves using computer simulations to assist in learning surgical techniques. Other medical professionals, such as physicians and dentists, use some form of computer-aided learning (CAL) program during training. CAS and CAL programs allow professionals in the medical field to practice procedures before actually performing them on human patients.

Many times you leave a doctor's office or hospital with a diagnosis and a prescription in hand. On the way home, you stop at the pharmacy to have the prescription filled. If you would like more information about your diagnosis, you could read a medical dictionary or attend a seminar. You also can use the Web for these purposes (Figure 11-27). Many Web sites provide up-to-date medical, fitness, nutrition, or exercise information. These Web sites also maintain databases of doctors and dentists to help you find the one that suits your

ISSUE

Protecting Electronic Health Information

Health Care

Societies that value privacy, but keep records of transactions or activities, are concerned about possible invasions of privacy. Medical records are becoming fully computerized. Government and private forces are pushing for standardization on a single identifier, such as the Social Security number (SSN) to index all medical records. The American College of Medical Informatics concluded the most expedient way to identify patient records is the Social Security number. Opponents argue the more threatening consequence of large, insecure databases is the ability to search for groups of previously anonymous people with certain characteristics. Will the privacy and security of an individual's medical history be compromised through the use of the SSN? What preventative measures could be used to protect an individual's privacy? Should an identifier other than the SSN be used for medical records? Should federal regulations protect the privacy of electronically stored medical records?

For more information on health and privacy, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #8.

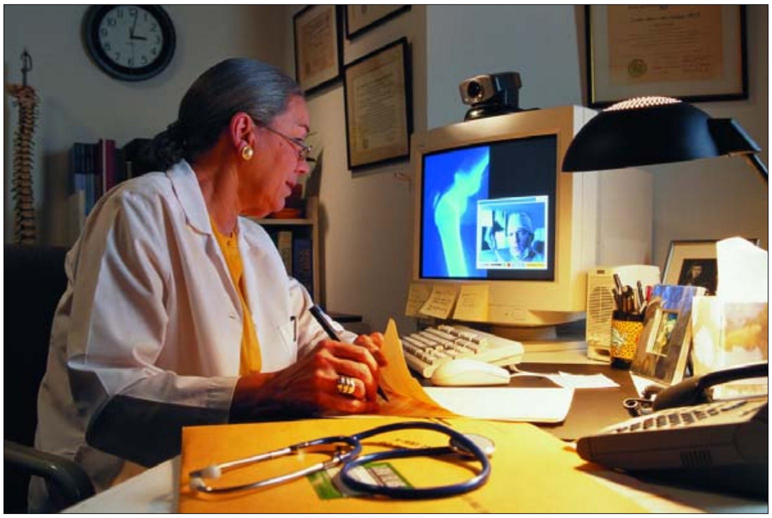
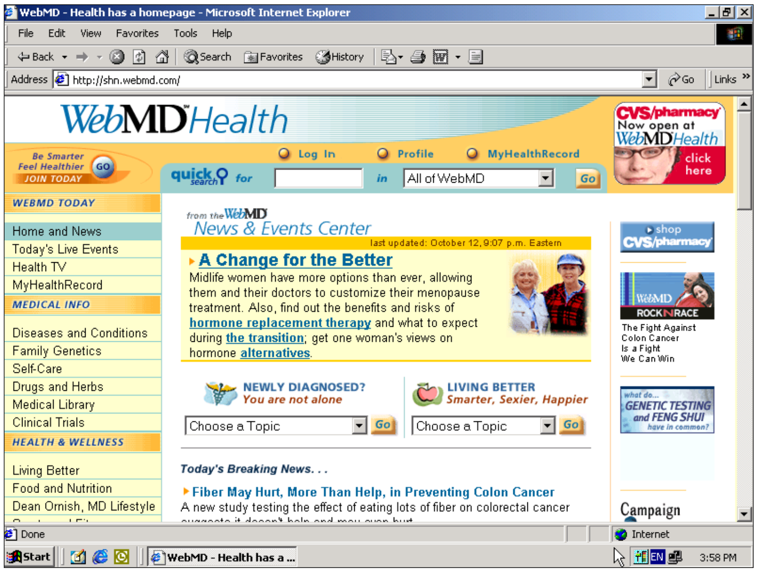


Figure 11-26 Using the capabilities of the Internet, doctors can collaborate online while viewing x-rays and other patient information.



A Change for the Better

Midlife women have more options than ever, allowing them and their doctors to customize their menopause treatment. Also, find out the benefits and risks of hormone replacement therapy and what to expect during the transition; get one woman's views on hormone alternatives.

Today's Breaking News. . .

Fiber May Hurt, More Than Help, in Preventing Colon Cancer

A new study testing the effect of eating lots of fiber on colorectal cancer

Figure 11-27 Many Web sites disseminate up-to-date health information.

needs. They have chat rooms, so you can talk to others diagnosed with similar conditions. Some Web sites even allow you to order prescription drugs online.

Much of society today is fitness conscious. Diet and exercise have become a part of daily life. Doctors often recommend some type of physical activity along with proper nutrition to maintain a healthy lifestyle. Whether you exercise at the local health club or at home in your basement, the equipment often has a computer built into it to track your progress (Figure 11-28). These computers monitor physical conditions, such as heart rate and pulse, to be sure you are exercising within safe limits.

Science

All branches of science, from biology to chemistry to physics, use computers to assist them with collecting, analyzing, and modeling data (Figure 11-29). Scientists also use the Internet to communicate with colleagues around the world.

Figure 11-28 Exercise equipment often uses computers to track progress and monitor physical conditions such as your heart rate and pulse.

Figure 11-29 Scientists use computers to assist them with collecting, analyzing, and modeling data.

Much of the success related to computers in the medical field is a result of breakthroughs made by scientists. The creation of computer chips that imitate the functions of the retina of the eye, cochlea of the ear, and the central nervous system have led to innovations in surgery, medicine, and treatments. For example, a cochlear implant allows a deaf person to talk and listen (Figure 11-30). Electrodes implanted in the brain can stop tremors associated with Parkinson's disease.

ISSUE

Cloning – Are Humans Next?

Science

The successful cloning of Dolly, the sheep, and Millie, the Jersey cow, are dramatic examples of a scientific discovery becoming a public issue. A survey of British medical scientists by The Independent (see URL below) indicates more than 50 percent believe the birth of a cloned baby is inevitable, despite society's current aversion to the idea. Scientists now have stirred up more controversy with the idea of using cells and tissue from human embryos in medical research. Cloned stem cells removed from one-week-old human embryos can be developed into any type of cell such as liver cells, brain cells, or heart cells. These cells then could be inserted into these and other organs of the body to repair damage and treat disease. Do you support cloned cell technology? Should cloned cell technology be legal? Should there be a law against cloning a human? Could you justify cloning if it was the only way for a couple to experience having a child of their own? Will society be able to prevent human cloning?

For more information on science, cloning, and the Web site mentioned above, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #9.

The voice recognition software we use today to speak into the computer is a result of scientific experimentation using neural networks. A **neural network** is a system that attempts to simulate the behavior of the human brain. Scientists create neural networks by connecting thousands of processors together much like the neurons in the brain are connected.

Publishing

Publishing is the process of making a work available to the public. These works include books, magazines, and newspapers. Publishers use computers and associated equipment to perform their daily jobs. They use desktop publishing and graphics software to design pages that include text, graphics, and photographs. Journalists have notebook computers and digital cameras to capture and record news as it occurs.

Many publishers make the content of magazines and newspapers available online (Figure 11-31). Some Web sites allow you to download an entire book to your computer (Figure 11-32). The cost for the electronic book is about the same or less than the cost of purchasing the print version. You can download these **electronic books** (**e-books**) to your desktop, notebook, or handheld computer. Handheld devices specifically designed for reading these electronic books also are available.

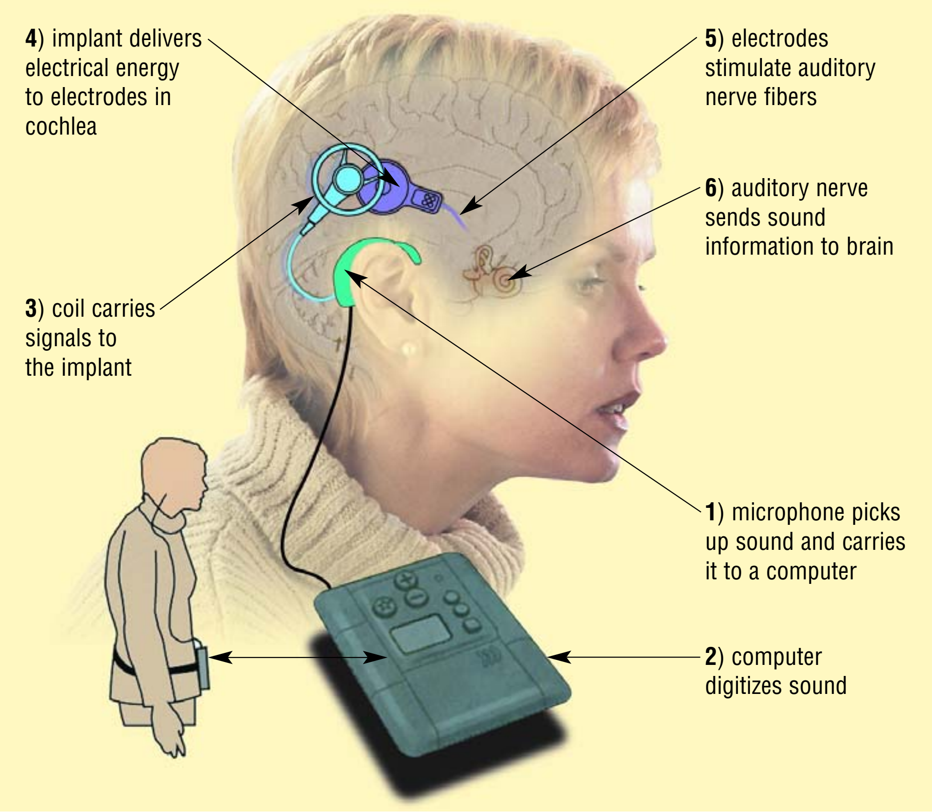
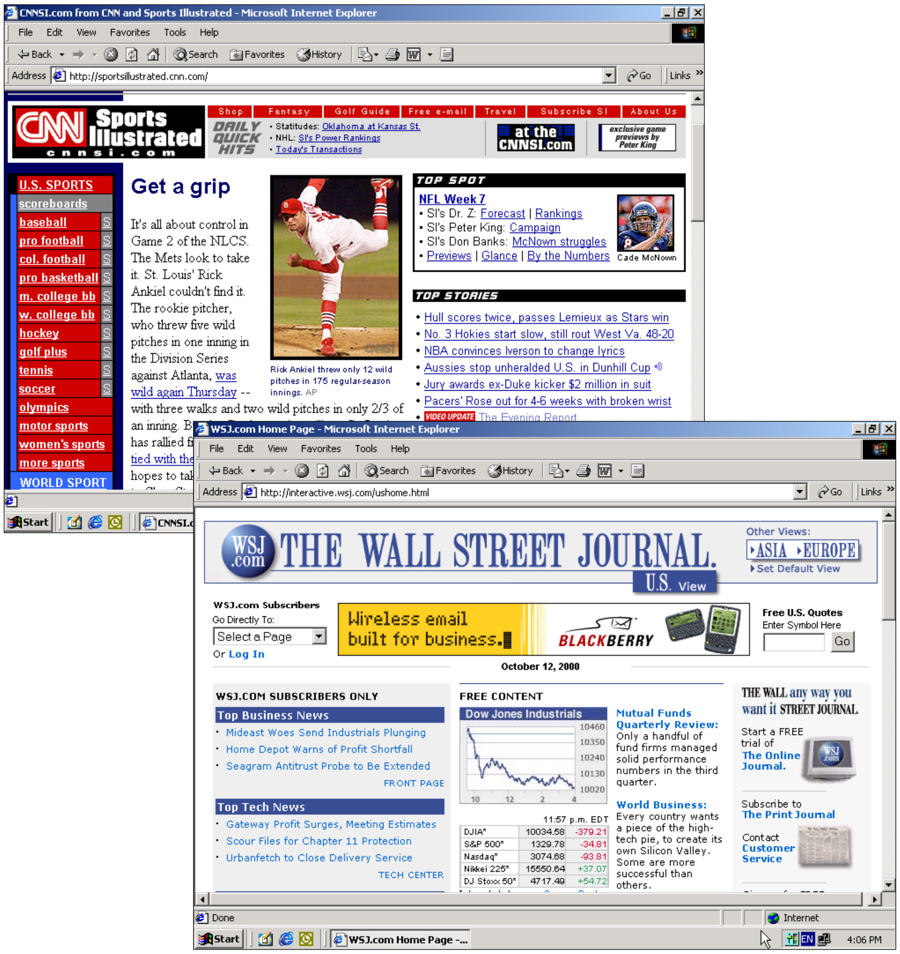

4) implant delivers electrical energy to electrodes in cochlea
5) electrodes stimulate auditory nerve fibers
6) auditory nerve sends sound information to brain
3) coil carries signals to the implant
1) microphone picks up sound and carries it to a computer
2) computer digitizes sound

Figure 11-30 Scientists developed an implant that when placed in the inner ear allows a deaf patient to hear.



- Statitudes: Oklahoma at Kansas St.
- NHL: SI's Power Rankings
- Today's Transactions

Get a grip

It's all about control in Game 2 of the NLCS. The Mets look to take it. St. Louis' Rick Ankiel couldn't find it. The rookie pitcher, who threw five wild pitches in one inning in the Division Series against Atlanta, was wild again Thursday -- with three walks and two wild pitches in only 2/3 of an inning.

Rick Ankiel threw only 12 wild pitches in 175 regular-season innings. AP

NFL Week 7
- SI's Dr. Z: Forecast | Rankings
- SI's Peter King: Campaign
- SI's Don Banks: McNown struggles
- Previews | Glance | By the Numbers

Cade McNown

- Hull scores twice, passes Lemieux as Stars win
- No. 3 Hokies start slow, still rout West Va. 48-20
- NBA convinces Iverson to change lyrics
- Aussies stop unheralded U.S. in Dunhill Cup
- Jury awards ex-Duke kicker $2 million in suit
- Pacers' Rose out for 4-6 weeks with broken wrist
- VIDEO UPDATE The Evening Report

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Top Business News
- Mideast Woes Send Industrials Plunging
- Home Depot Warns of Profit Shortfall
- Seagram Antitrust Probe to Be Extended

Top Tech News
- Gateway Profit Surges, Meeting Estimates
- Scour Files for Chapter 11 Protection
- Urbanfetch to Close Delivery Service

11:57 p.m. EDT

DJIA*	10034.58	-379.21
S&P 500*	1329.78	-34.81
Nasdaq*	3074.68	-93.81
Nikkei 225*	15550.64	+37.07
DJ Stoxx 50*	4717.49	+54.72

Mutual Funds Quarterly Review: Only a handful of fund firms managed solid performance numbers in the third quarter.

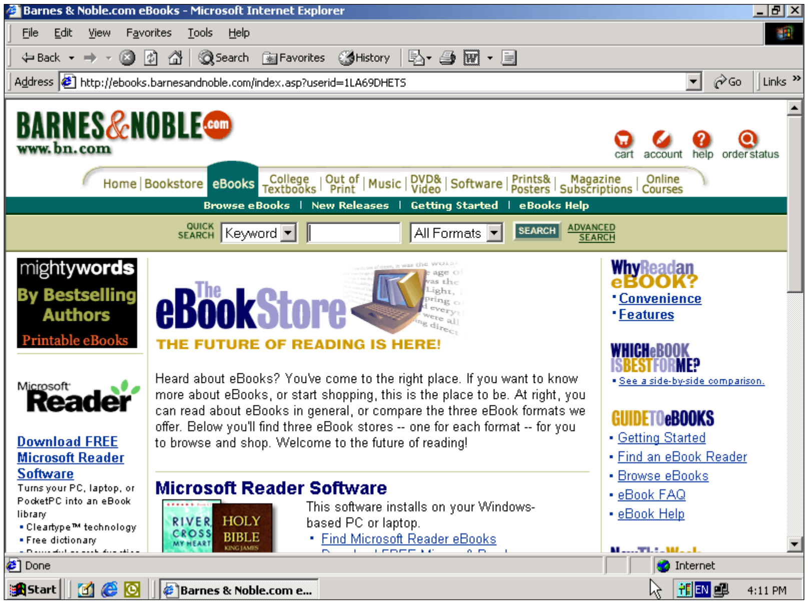
World Business: Every country wants a piece of the high-tech pie, to create its own Silicon Valley. Some are more successful than others.

Start a FREE trial of The Online Journal.

Subscribe to The Print Journal

Contact Customer Service

Figure 11-31 Many publishers make the content of their magazines and newspapers available online.



Heard about eBooks? You've come to the right place. If you want to know more about eBooks, or start shopping, this is the place to be. At right, you can read about eBooks in general, or compare the three eBook formats we offer. Below you'll find three eBook stores -- one for each format -- for you to browse and shop. Welcome to the future of reading!

Download FREE Microsoft Reader Software
Turns your PC, laptop, or PocketPC into an eBook library
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- Free dictionary

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This software installs on your Windows-based PC or laptop.
- Find Microsoft Reader eBooks

- Convenience
- Features
- See a side-by-side comparison.
- Getting Started
- Find an eBook Reader
- Browse eBooks
- eBook FAQ
- eBook Help

Figure 11-32 One study predicts electronic books will capture one third of the printed book market.

Web Link

For more information on e-books, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click E-Books.

COMPANY ON THE CUTTING EDGE

britannica.com

Publishing Information Electronically

All men by nature desire to know, according to Aristotle. For more than two centuries, Britannica editors have been satisfying this quest for information.

In 1768, two men in Edinburgh, Scotland, hired an editor to capture the major developments occurring in the arts and sciences. Three years later, the three-volume *Encyclopædia Britannica* was born. The first printing sold out quickly, leading to subsequent editions. By 1809, the fourth edition of the publication had grown to 20 volumes. In 1974, the 15th edition blossomed to 30 volumes.

The 15th edition, revolutionary in many ways, had been edited and published completely in-house using computers. By creating the first CD-ROM multimedia encyclopedia in 1989 and by putting the entire print version on the Internet in 1993, Britannica has maximized the features of electronic publishing.

Today's Britannica.com contains databases that combine the text of the encyclopedia with more than 125,000 Web sites, 100 million Web pages, articles from the world's leading magazines, current news supplied by washingtonpost.com, stock market updates, weather forecasts, and links to related books that can be ordered online.

For more information on Britannica.com, visit the Discovering Computers 2002 Companies Web page (**scsite.com/dc2002/companies.htm**) and click Britannica.com.

Web bar codes are another recent development that link printed media to the Web. Newspapers, magazines, books, and postcards display these bar codes throughout the printed pages. Using a handheld scanner connected to your computer, you scan the bar code to display a related Web page on your computer screen.

Travel

Whether traveling by car or airplane, your goal is to arrive safely at your destination. As you make the journey, you may interact with some of the latest technology.

Many vehicles manufactured today include some type of onboard navigation facility (Figure 11-33). These cars have a **GPS** (**global positioning system**) receiver that reports your car's location via satellites. Depending on the one you choose, the onboard navigation systems offer the consumer many worthwhile features:

- Provide you with directions
- Automatically call for help if your airbag deploys and you do not respond to voice contact
- Provide emergency services as soon as you press the emergency button
- Dispatch roadside assistance
- Perform remote diagnostics if a warning light appears on the dashboard
- Unlock the driver's side door if you lock the keys in the car
- Make hotel and restaurant reservations
- Track the vehicle if it is stolen
- Honk the horn to help you locate the car in a parking lot

The fee for an onboard navigation system varies by manufacturer.

The search for a new or used car to meet your needs no longer has to involve driving from one car dealership to another. Instead, you

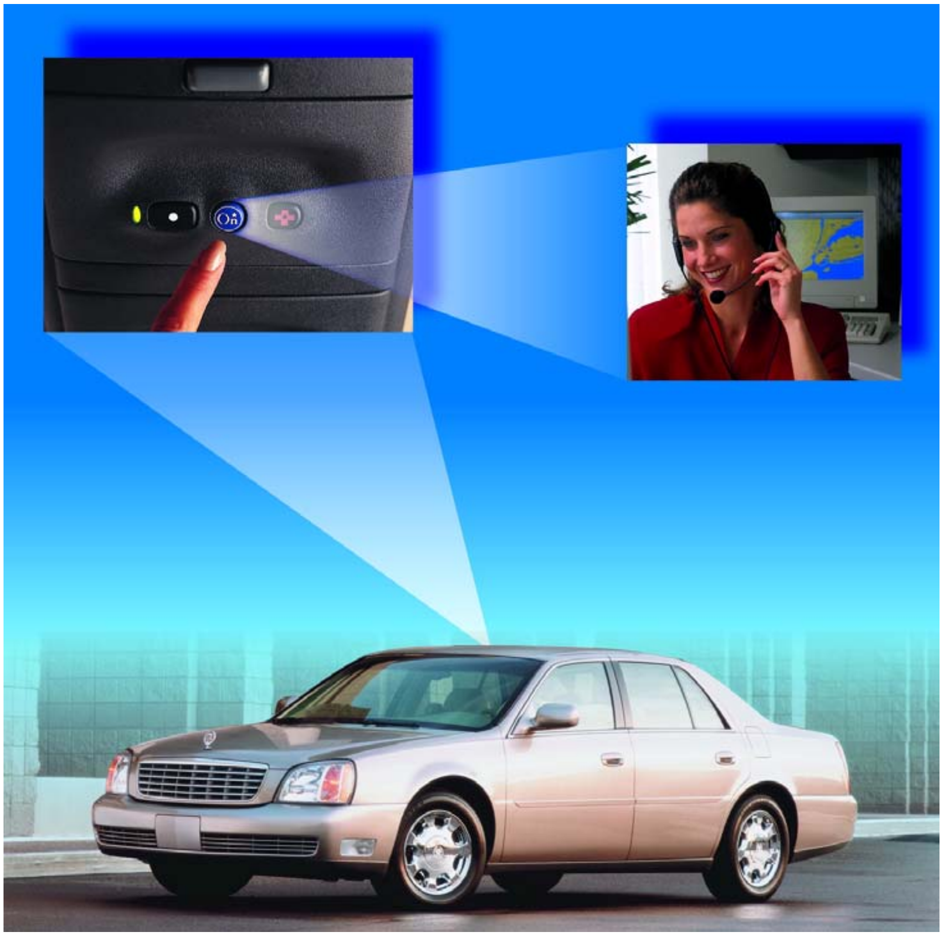


Figure 11-33 Many vehicles made by General Motors are equipped with an onboard safety, security, and information service called OnStar. By pushing the OnStar button, you immediately connect to an OnStar advisor.

ISSUE

Privacy Invader?

Publishing

First the mouse and now the cat, CueCat that is! This free, handheld device attaches to your computer. Instead of typing in a Web site address, you use the Cat to scan bar codes in magazines and other marketing promotions. Using the CueCat involves a lengthy installation process requiring the user to submit personal information to receive an authentication code. Many people contend it is not consumer convenience driving this promotion, but rather marketing mania. On the Web, it is easy to track those who click the Web advertisements. Bar code scanning would provide the capability to track print advertisements. Do you agree the CueCat is more of a marketing gadget to track advertisement response? Is using Web bar codes to track people's Web behavior an invasion of privacy? Should you have to provide personal information before you can use a device such as the CueCat? Do you think the CueCat will become the biggest computer innovation since the mouse?

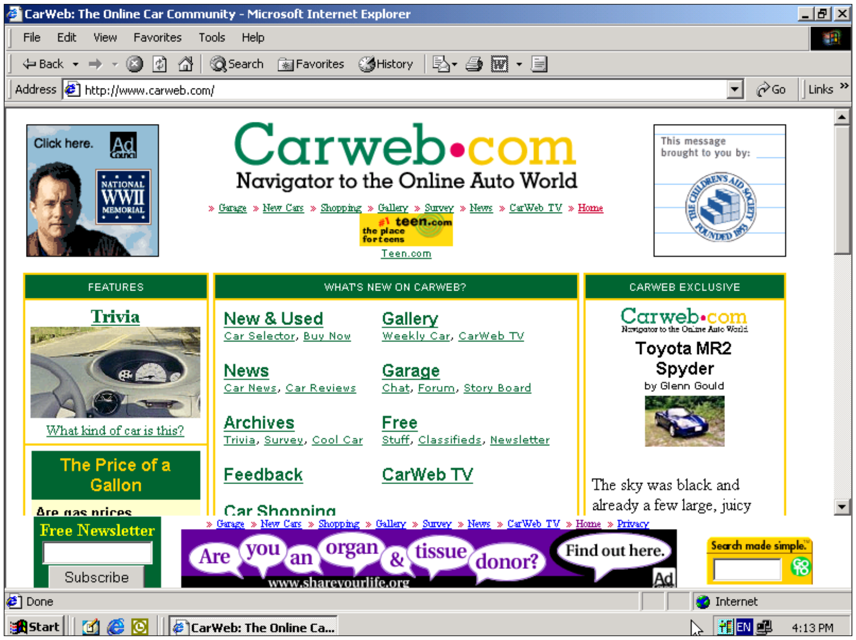
For more information on publishing, Web bar code tracking, and the CueCat, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #10.

can shop online for your next car (Figure 11-34). In addition to locating and delivering cars for customers, these sites offer services such as loans, leases, insurance, and warranties. Many allow you to sell a used car as well.

If you plan to drive somewhere and are unsure of the path to take to your destination, you can print directions and a map from the Web. By entering the starting address and ending address, the Web site generates the best route for your trip.

Many vehicles today also include options such as screens with e-mail and Internet access, printers, and fax capability. Airlines also are joining the online forces. Airplanes equipped with Internet connections allow passengers to connect their notebook or handheld computer to the Web. Some airlines even provide passengers with Web surfing devices during their flight.

In preparing for an upcoming trip, you may need to reserve a car, hotel, or flight. Many Web sites offer these services to the public. For example, you can order airline tickets from any computer connected to the Web through an online travel reservation service and have the tickets waiting for you at the airport or delivered directly to your door (Figure 11-35).


CarWeb: The Online Car Community - Microsoft Internet Explorer
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Back Search Favorites History
Address http://www.carweb.com/
Go Links
Click here.
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Carweb•com
Navigator to the Online Auto World
Garage New Cars Shopping Gallery Survey News CarWeb TV Home
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Teen.com
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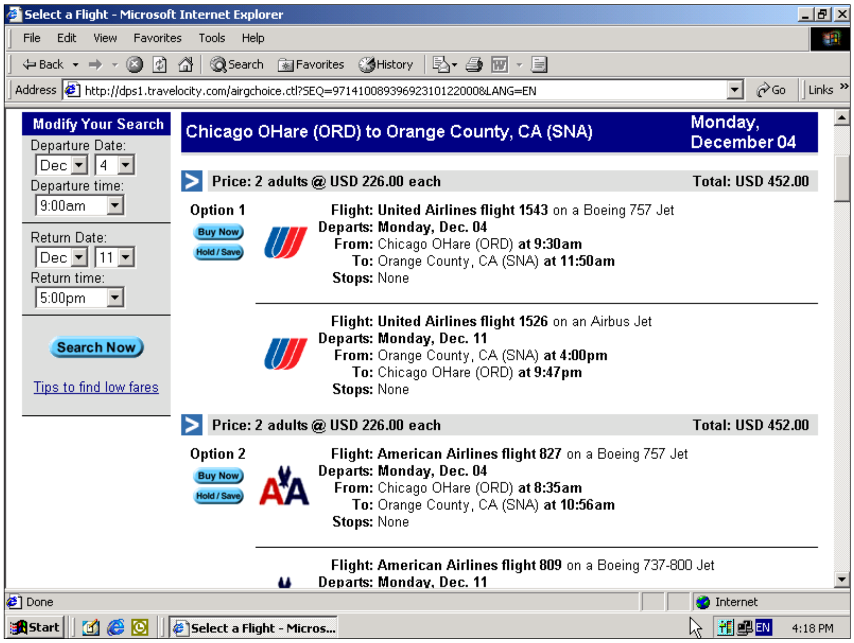
Trivia
What kind of car is this?
The Price of a Gallon
Are gas prices
WHAT'S NEW ON CARWEB?
New & Used
Car Selector, Buy Now
Gallery
Weekly Car, CarWeb TV
News
Car News, Car Reviews
Garage
Chat, Forum, Story Board
Archives
Trivia, Survey, Cool Car
Free
Stuff, Classifieds, Newsletter
Feedback
CarWeb TV
Car Shopping
CARWEB EXCLUSIVE
Toyota MR2 Spyder
by Glenn Gould
Free Newsletter
Subscribe
Garage New Cars Shopping Gallery Survey News CarWeb TV Home Privacy
Are you an organ & tissue donor? Find out here.
www.shareyourlife.org
Search made simple.
Done
Internet
Start
CarWeb: The Online Ca...
4:13 PM

The sky was black and already a few large, juicy

Figure 11-34 You can buy a new or used car online at Web sites such as the one shown in this figure.


Select a Flight - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Go Links
Modify Your Search
Buy Now
Hold / Save
Search Now
Tips to find low fares
Done
Internet
Start
Select a Flight - Micros...
4:18 PM

Address http://dps1.travelocity.com/airgchoice.ctl?SEQ=971410089396923101220008LANG=EN

Departure Date: Dec 4
Departure time: 9:00am
Return Date: Dec 11
Return time: 5:00pm

Chicago OHare (ORD) to Orange County, CA (SNA) Monday, December 04

Price: 2 adults @ USD 226.00 each Total: USD 452.00

Option 1

Flight: **United Airlines flight 1543** on a Boeing 757 Jet
Departs: **Monday, Dec. 04**
From: Chicago OHare (ORD) **at 9:30am**
To: Orange County, CA (SNA) **at 11:50am**
Stops: None

Flight: **United Airlines flight 1526** on an Airbus Jet
Departs: **Monday, Dec. 11**
From: Orange County, CA (SNA) **at 4:00pm**
To: Chicago OHare (ORD) **at 9:47pm**
Stops: None

Price: 2 adults @ USD 226.00 each Total: USD 452.00

Option 2

Flight: **American Airlines flight 827** on a Boeing 757 Jet
Departs: **Monday, Dec. 04**
From: Chicago OHare (ORD) **at 8:35am**
To: Orange County, CA (SNA) **at 10:56am**
Stops: None

Flight: **American Airlines flight 809** on a Boeing 737-800 Jet
Departs: **Monday, Dec. 11**

Figure 11-35 You can make car, hotel, and airline reservations directly from the Web.

ISSUE

Online Travel Travails

Travel

A recent study from the Travel Industry Association of America (see URL below) says eight million Americans booked travel on the Web last year. Buying tickets on the Web does have an advantage; the store is open 24 hours a day. What about disadvantages? Some travelers report their ticket price was as high or higher than from a travel agency. Others report with some services they can book a seat online, but when they arrive at the gate, the seat is not valid. Or, the fabulous vacation was not so fabulous, and the five star hotel accommodations were three star. Which is the better option — to use a travel agent or to be your own travel agent via the Web? When using the Web, are people tempted to purchase a trip beyond their budget? Should the online travel agency be responsible if the accommodations are less than advertised? Some online agencies sell your personal data. Should you be concerned about privacy issues?

For more information on online travel and the Web site mentioned above, visit the Discovering Computers 2002 Issues Web page (**scsite.com/ dc2002/ issues.htm**) and click Chapter 11 Issue #11.

Telecommuting

Telecommuting is a work arrangement in which employees work away from a company's standard workplace, and often communicate with the office using some communications technology (Figure 11-36). The amount of people that telecommute has exploded in recent years. The number has risen from 4 million in 1990 to more than 20 million today.

Workers telecommute for a variety of reasons:

1. Reduce time and expense spent traveling to the office.
2. Eliminate travel during unsafe weather conditions.
3. Allow a flexible work schedule so that employees can combine work and personal responsibilities, such as childcare.
4. Provide a convenient, comfortable work environment for disabled employees or those recovering from injury or illness.

Employees that telecommute tend to have higher job satisfaction rates and are more productive. Employers benefit from this increase in productivity. Employers also realize a reduction in overhead because telecommuting employees require less office space, furniture, and so on.

Another added benefit of telecommuting is it reduces air pollution caused by vehicles traveling to and from an office. Thus, telecommuting is healthy for the environment.

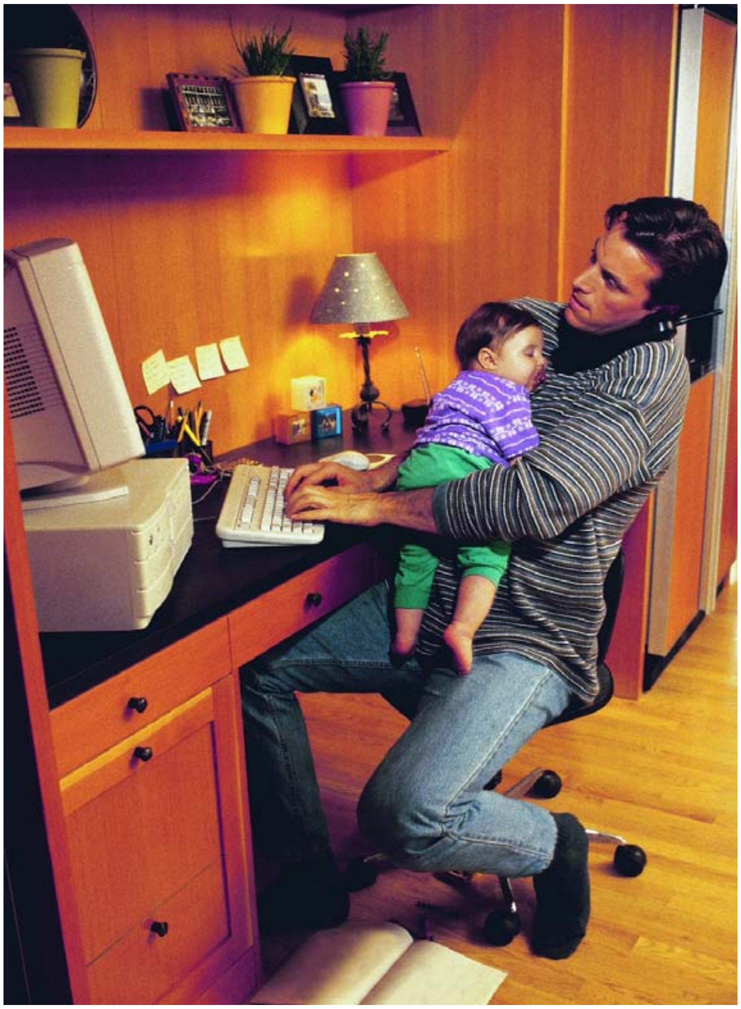


Figure 11-36 Telecommuting allows you to work from home or some other location away from a main office.

ISSUE

The Good Life

Telecommuting

More than 20 million Americans telecommute to work today, up from just 4 million in 1990. Predictions are that number will grow during this decade as advances in technology and more jobs in the digital economy make it possible for more people to work at home. Telecommuting definitely has advantages — but what about disadvantages? For example, out of sight, out of mind. If you are not in the office every day, could you be passed over for a promotion? Where is a worker more productive, at home or in the office? Are there benefits to working at home? If so, what are they?

For more information on telecommuting, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #12.

Web Link

For more information on telecommuting, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Telecommuting.

EMERGING TECHNOLOGIES

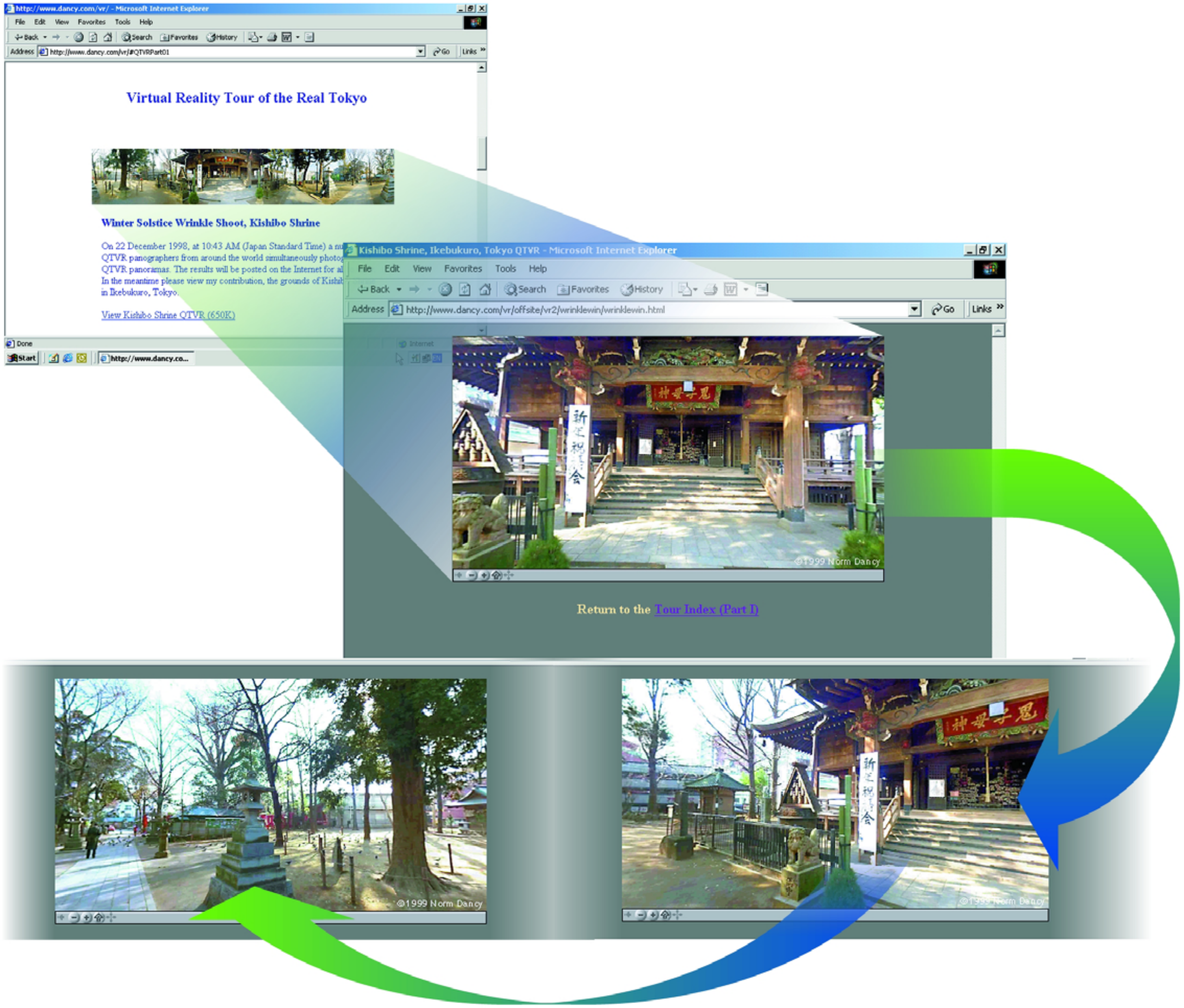
The previous sections discussed how society uses computers in everyday life. Other specialized applications of computers include virtual reality, intelligent agents, and robotics. In the past, these areas of computer usage were considered *high tech* and not to be used by the average consumer. Today, these amazing technologies are emerging in everyday applications. The following sections discuss each of these emerging technologies.

Virtual Reality

Virtual reality (**VR**) is the use of computers to simulate a real or imagined environment that appears as a three-dimensional (3-D) space. VR allows you to explore and manipulate controls to experience the 3-D space fully.

On the Web, VR involves the display of 3-D images you can explore and manipulate interactively. Using special VR software, a Web developer creates an entire 3-D site that contains infinite space and depth, called a **VR world**. Many of these worlds provide 360-degree tours of locations such as automobiles, buildings, colleges, sites of interest, and cities (Figure 11-37).

When many people think of virtual reality, they focus on the thrilling aspects of VR games. Virtual reality, however, does have numerous practical applications. Training, engineering, e-commerce, science, and medicine use virtual reality. Many companies use VR simulations to train people that operate expensive and complicated equipment such as airplanes and ships.


http://www.dancy.com/vr/ - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://www.dancy.com/vr/#QTVRPart01
Go Links
Done
Start
http://www.dancy.co...
Kishibo Shrine, Ikebukuro, Tokyo QTVR - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://www.dancy.com/vr/offsite/vr2/wrinklewin/wrinklewin.html
Go Links
Internet
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Virtual Reality Tour of the Real Tokyo

Winter Solstice Wrinkle Shoot, Kishibo Shrine

On 22 December 1998, at 10:43 AM (Japan Standard Time) a nu
QTVR panographers from around the world simultaneously photog
QTVR panoramas. The results will be posted on the Internet for al
In the meantime please view my contribution, the grounds of Kishib
in Ikebukuro, Tokyo.

View Kishibo Shrine QTVR (650K)

Return to the Tour Index (Part I)

Figure 11-37 This virtual reality (VR) tour gives you a 360-degree view of the Kishibo Shrine in Ikebukuro, Tokyo.

In recent years, developers also have created VR simulations for less expensive, simpler equipment such as trucks and construction machinery. Architects use VR to show clients previews of buildings and landscapes. Automobile dealers use VR to create a virtual showroom in which customers can view the exterior and interior of available vehicles. Medical schools also use VR for training — most often to simulate surgery. Several schools even use VR to allow parents and prospective students to take a virtual tour of the school from their home.

Web Link

For more information on virtual reality, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Virtual Reality.

In more advanced forms, VR software requires you to wear specialized headgear, body suits, and gloves to enhance the experience of the simulated environment (Figure 11-38). The headgear displays the artificial environment in front of both of your eyes. As the headgear moves, so do the views on the screens.

A body suit and gloves sense your motion and direction, allowing you to move through and pick up and hold items displayed in the virtual environment. Experts predict that eventually the body suits will provide tactile feedback, enabling people to experience the touch and feel of the virtual world.

Intelligent Agents

Artificial intelligence (**AI**) is the application of human intelligence to computers. AI technology can sense your actions and, based on logical assumptions and prior experience, take the appropriate action to complete a task. For more than 40 years, AI experts promoted the advantages of **smart software**, or software with built-in intelligence. In recent years, this concept has become a reality in the form of intelligent agents.

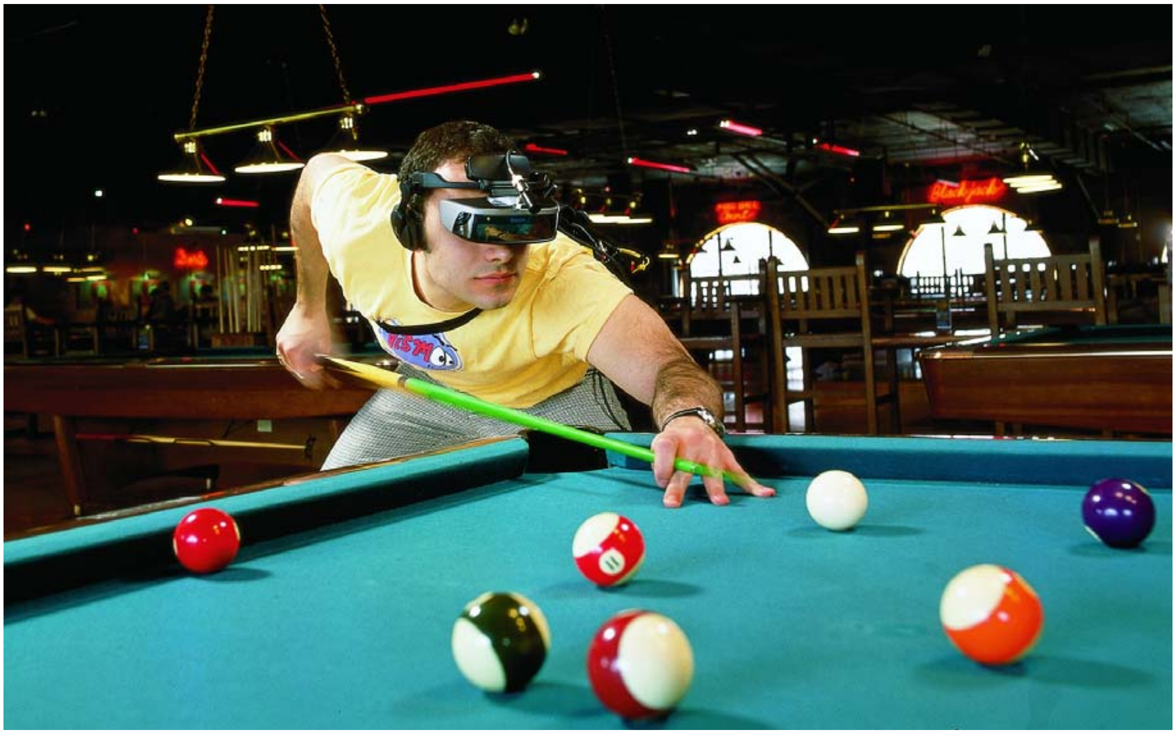
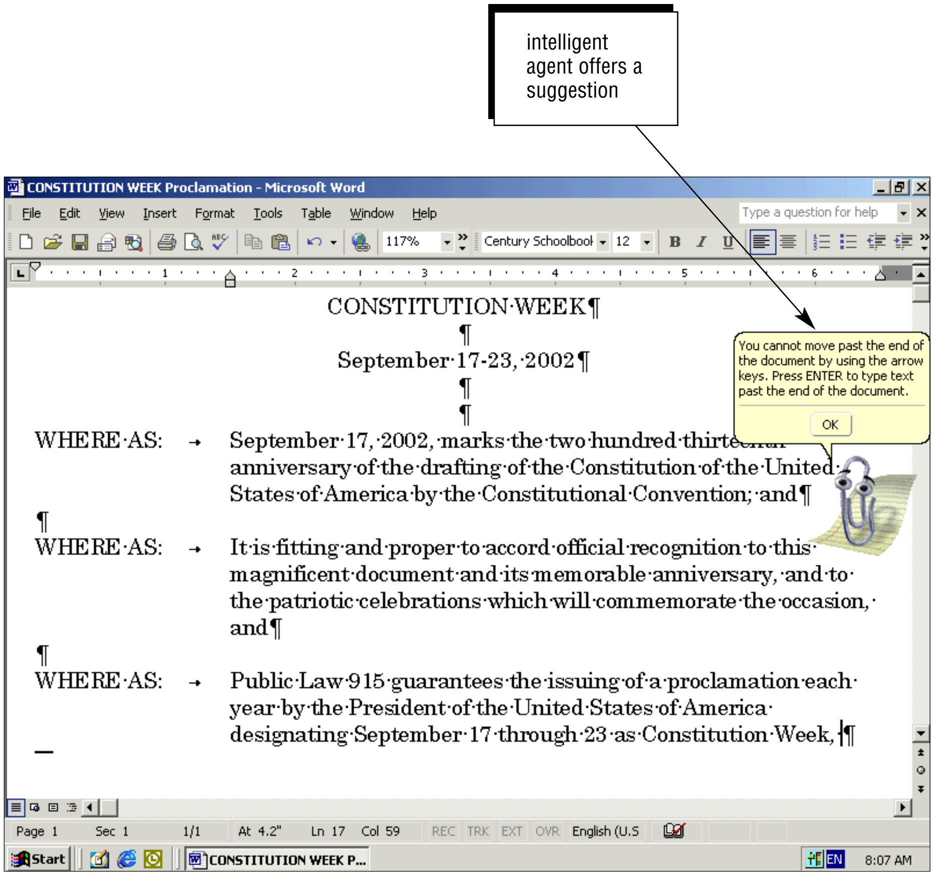


Figure 11-38 As this pool player looks through virtual reality (VR) goggles at the pool table, a miniature video recorder on the VR goggles sends an image of the pool table to a computer that is in a backpack worn by the pool player. The computer determines the best shot and shows the player exactly how to hit the cue ball by projecting a white line onto the VR goggles that leads from the cue ball to the target ball. A second white line shows the pool player which pocket the ball will drop in if he hits the cue ball along the first white line.

An **intelligent agent** is any software program that independently asks questions, pays attention to work patterns, and carries out tasks on behalf of a user. Many software packages today include intelligent agents. Some e-mail programs allow you to filter incoming messages and request immediate notification if messages arrive with a particular subject or from a certain person. Microsoft Office has IntelliSense™ technology that corrects text as you enter it, organizes and updates your menus and toolbars to display frequently used commands and buttons, and suggests more efficient ways to complete tasks (Figure 11-39).

A **network agent** is a sophisticated type of intelligent agent that performs tasks on remote computers before bringing the results back to the user. You often use a network agent, sometimes called a **bot**, when you search the Web or other networks for information. You could direct a network agent to research all references to Civil War battles in the state of Virginia. Some network agents can learn a user's interests, develop a user profile, search the entire Internet to find relevant documents, and deliver the information to your desktop automatically. For example, you could request to receive an e-mail message whenever a stock alert occurs, the market closes, or a stock price varies greatly.


intelligent agent offers a suggestion

CONSTITUTION WEEK Proclamation - Microsoft Word
File Edit View Insert Format Tools Table Window Help
Type a question for help
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Start
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8:07 AM

CONSTITUTION WEEK

September 17-23, 2002

WHEREAS: → September 17, 2002, marks the two hundred thirte anniversary of the drafting of the Constitution of the United States of America by the Constitutional Convention; and

WHEREAS: → It is fitting and proper to accord official recognition to this magnificent document and its memorable anniversary, and to the patriotic celebrations which will commemorate the occasion, and

WHEREAS: → Public Law 915 guarantees the issuing of a proclamation each year by the President of the United States of America designating September 17 through 23 as Constitution Week,

You cannot move past the end of the document by using the arrow keys. Press ENTER to type text past the end of the document.

OK

Figure 11-39 Shown here is the Microsoft Office intelligent agent offering a suggestion for a more efficient way to complete a task.

Web Link

For more information on intelligent agents, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Intelligent Agents.

ISSUE

VR and Robots

Emerging Technologies

Manipulation of objects in virtual environments is awkward. The simple task of grabbing and moving a virtual object is difficult because of the lack of tactile feedback and other factors. At the University of Washington (see URL below), the Human Interface Technology Research Lab focuses on human computer interfaces and virtual interface technology. One research project uses virtual reality technology as applied to the design and implementation of medical robotic interfaces. One element of this project is human-controlled robotic surgery. This system contains two components: a master and a slave. The slave is a robotic device that performs the surgery. The master is the human interface that controls the slave. One advantage is in microsurgery where robots perform small, delicate operations that the human hand cannot perform. How practical is this type of research? What are the advantages? Disadvantages? Will microsurgery soon be possible? Would you be willing to be a microsurgery patient? Why or why not?

For more information on emerging technologies and the Web site mentioned above, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #13.

Robots

A **robot** is a computer-controlled device that can move and react to feedback from the outside world (Figure 11-40). In the past, robots were used only in specialized areas. For example, factories have used robots to perform jobs requiring repetitive tasks, lifting heavy equipment, or high degrees of precision.

As the cost of robots drops, more and more homes will be using them as well. For example, AIBO is a dog that has the ability to learn and mature. You send commands to AIBO, such as sit and roll over, through a remote control. AIBO also can play games that other dogs play, such as fetching a stick or a ball.

A more sophisticated robot is the CareBot, which is a mechanical servant on wheels. A personal computer controls the CareBot via radio frequency signals. This advanced technology robot can baby-sit, help older children with homework such as learning Spanish, fetch items such as cans of soda, remind you to take medicine, alert medical authorities if its microphone does not hear a heartbeat, monitor the security system in your home, adjust room temperature, and yes, vacuum. Depending on features, the cost of the CareBot ranges from $2,500 to $4,500.

Web Link

For more information on robotics, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Robotics.

A HEALTHY WORK ENVIRONMENT

This widespread computer use also has led to some important concerns. Long-term computer use can lead to health complications. Be proactive and minimize your chance of risk. The following sections discuss health risks and preventions, along with measures you can take to keep our environment healthy.

Computers and Health Risks

The Bureau of Labor Statistics reports that work-related musculoskeletal disorders account for one-third of all job-related injuries and illnesses. A **musculoskeletal disorder** (**MSD**), also called a **repetitive stress injury** (**RSI**), is an injury or disorder of the muscles, nerves, tendons, ligaments, and joints. Computer-related RSIs include tendonitis and carpal tunnel syndrome.

Figure 11-40a (SR2 security robot)

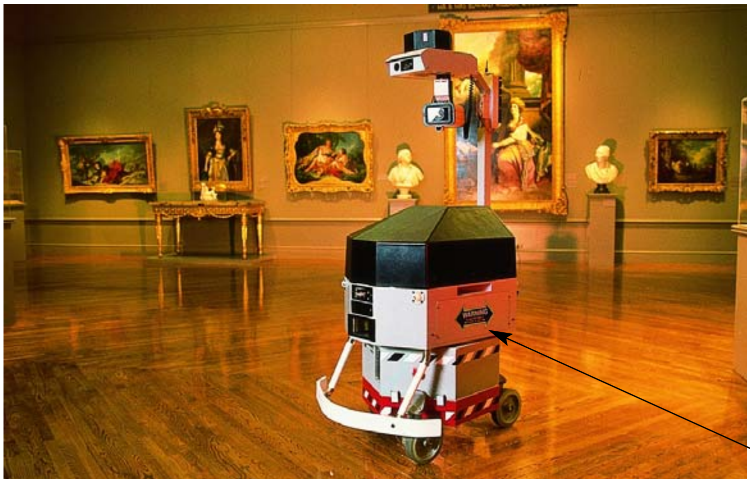


Figure 11-40b (robot pushing shopping cart)

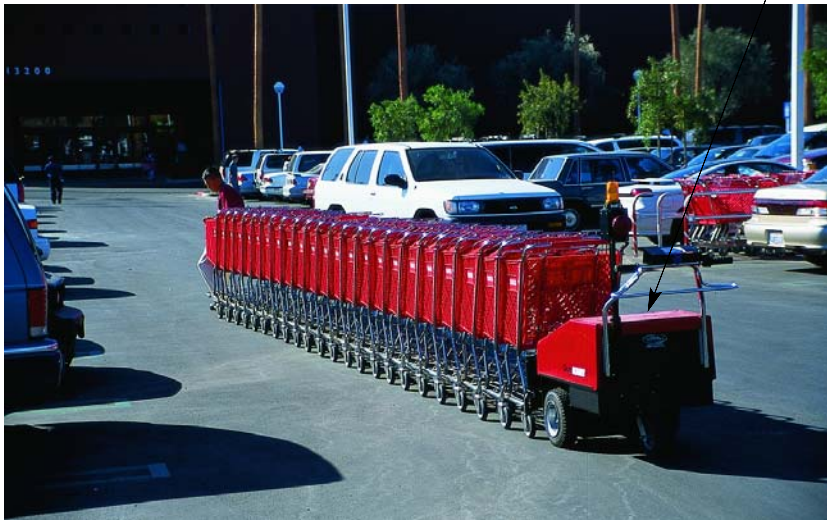


Figure 11-40 Some robots operate by remote control, such as the one shown immediately above that pushes shopping carts. Others use more advanced technology. For example, the SR2 security robot shown in the top photo guards art objects in the Los Angeles County Museum of Art. The SR2 detects motion and warns of intruders. It also detects smoke, fire, and increases in humidity or gases.

RSIs are the largest job-related injury and illness problem in the United States today. For this reason, OSHA (Occupational Safety and Health Administration) has proposed standards whereby employers must establish programs that prevent workplace injuries with respect to computer usage.

Tendonitis is inflammation of a tendon due to some repeated motion or stress on that tendon. **Carpal tunnel syndrome** (**CTS**) is inflammation of the nerve that connects your forearm to the palm of your wrist. Repeated or forceful bending of the wrist can cause CTS or tendonitis of the wrist. Symptoms of tendonitis of the wrist include extreme pain that extends from the forearm to the hand, along with tingling in the fingers. Symptoms of CTS include burning pain when the nerve is compressed, along with numbness and tingling in the thumb and first two fingers.

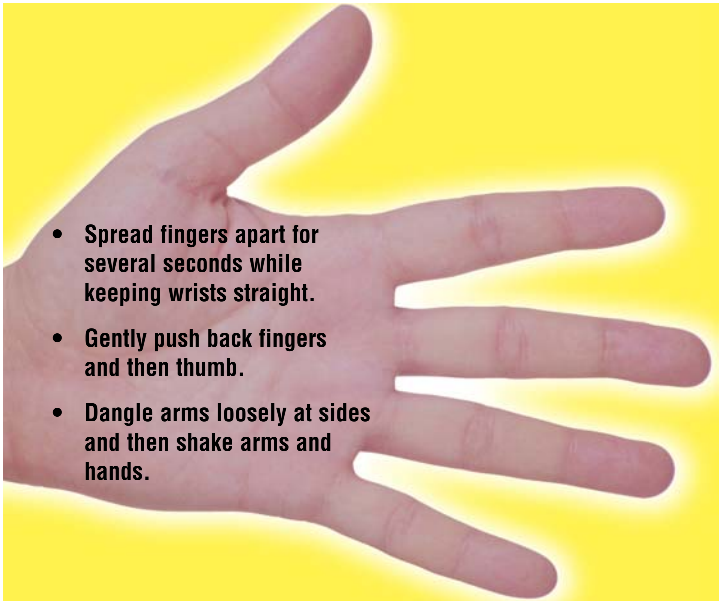
Long-term computer work can lead to tendonitis or CTS. Factors that cause these disorders include prolonged typing, prolonged mouse usage, or continual shifting between the mouse and the keyboard. If untreated, these disorders can lead to permanent damage to your body.

You can take many precautions to prevent these types of injuries. Take frequent breaks during the computer session to exercise your hands and arms (Figure 11-41). To prevent injury due to typing, place a wrist rest between the keyboard and the edge of your desk. The wrist rest reduces strain on your wrist while typing. To prevent injury while using a mouse, place the mouse at least six inches from the edge of the desk. In this position, your wrist is flat on the desk, which causes bending to occur at the elbow when you move the mouse. Finally, minimize the number of times you switch between the mouse and the keyboard.

Another type of health-related condition due to computer usage is **computer vision syndrome** (**CVS**). You may have CVS if you have any of these conditions: sore, tired, burning, itching, or dry eyes; blurred or double vision; distance vision blurred after prolonged staring at monitor; headache or sore neck; difficulty shifting focus between monitor and documents; difficulty focusing on the screen image; color fringes or afterimages when you look away from the monitor; and increased sensitivity to light. Although eyestrain associated with CVS is not thought to have serious or long-term consequences, it is disruptive and unpleasant. Figure 11-42 outlines some techniques you can follow to ease the eyestrain.

Computer workers also sometimes complain of lower back pain, muscle fatigue, and emotional fatigue. Lower back pain sometimes is caused from poor posture. Always sit properly in the chair while working. Take a break every 30 to 60 minutes — stand up, walk around, or stretch. Another way to help prevent these injuries is to be sure your workplace is designed ergonomically.

HAND EXERCISES



- Spread fingers apart for several seconds while keeping wrists straight.
- Gently push back fingers and then thumb.
- Dangle arms loosely at sides and then shake arms and hands.

Figure 11-41 To reduce the chance of developing tendonitis or carpal tunnel syndrome, take frequent breaks during computer sessions to exercise your hands and arms.

TECHNIQUES TO EASE EYESTRAIN

- Every 10 to 15 minutes, take an eye break.
  - Look into the distance and focus on an object for 20 to 30 seconds.
  - Roll your eyes in a complete circle.
  - Close your eyes and rest them for at least a minute.
- Blink your eyes every five seconds.
- Place your monitor about an arm's length away from your eyes with the top of the screen at eye level or below.
- Use a glare screen.
- Use large fonts.
- If you wear glasses, ask your doctor for computer glasses.
- Adjust the lighting.

Figure 11-42 Following these tips may help to reduce eyestrain while working on the computer.

Ergonomics and Workplace Design

Ergonomics is an applied science devoted to incorporate comfort, efficiency, and safety into the design of items in the workplace. Ergonomic studies have shown that using the correct type and configuration of chair, keyboard, monitor, and work surface will help you work comfortably and efficiently, and help protect your health. For the computer workspace, experts recommend an area of at least two feet by four feet. Figure 11-43 illustrates additional guidelines for setting up the work area.

Many monitors and keyboards have features that help address ergonomic issues. Some keyboards have built-in wrist rests. Others have an ergonomic design specifically to prevent RSI. Most monitors have a tilt-and-swivel base, so you can adjust the angle of the screen to minimize neck strain and reduce glare from overhead lighting. Monitors also have controls that allow you to adjust the brightness, contrast, positioning, height, and width of images. Be sure the monitor you use adheres to the **MPR II standard**, which defines acceptable levels of radiation. Sit at arm's length from the monitor to reduce further any radiation risk, because radiation levels drop dramatically with distance.

Web Link

For more information on ergonomics, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Ergonomics.

Computer Addiction

Computers can provide hours of entertainment and enjoyment. Some people, however, are obsessed with the computer and the Internet. Computer addiction is a growing health problem. **Computer addiction** occurs when the computer consumes someone's entire social life. Users addicted to the Internet are said to have an **Internet addiction disorder** (**IAD**).

Symptoms of computer addiction include the following:

- Craves computer time
- Overjoyed when at the computer
- Unable to stop computer activity
- Irritable when not at the computer
- Neglects family and friends
- Problems at work or school

Computer addiction is a treatable illness through therapy and support groups.

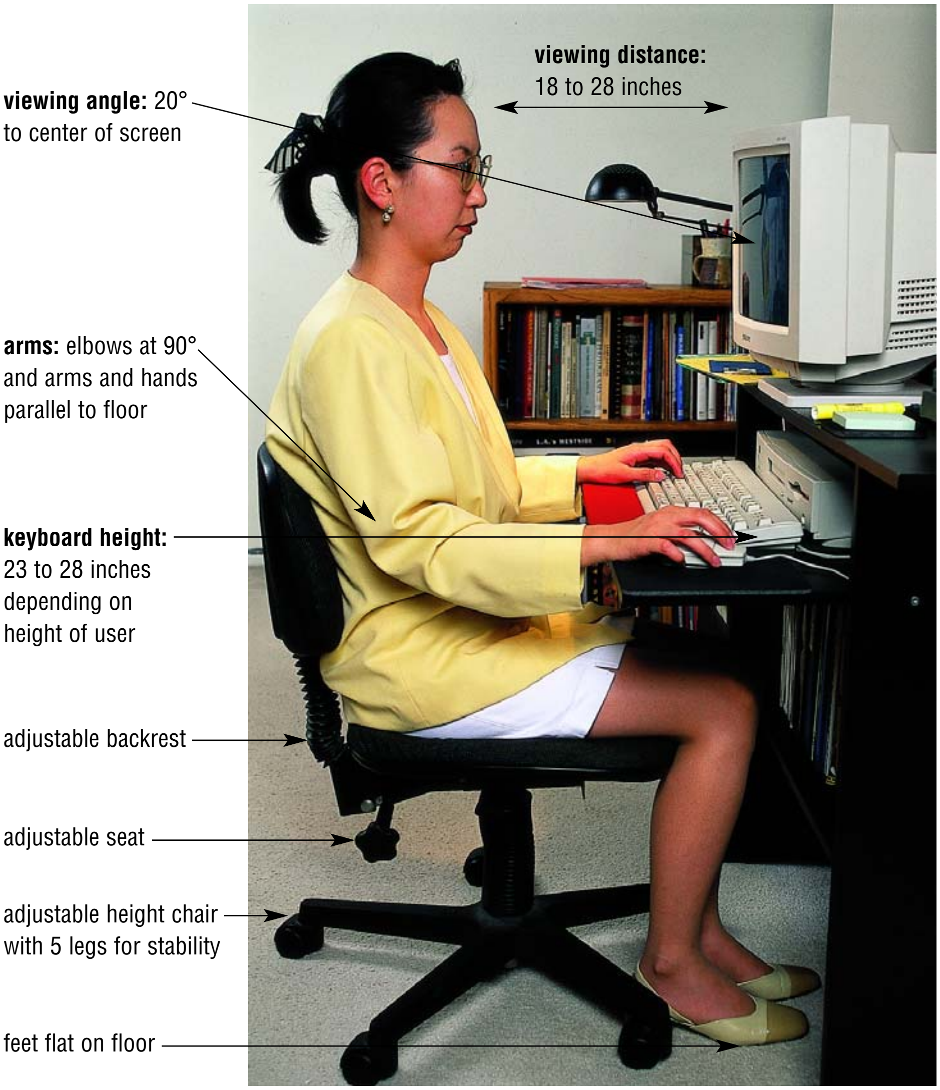

viewing distance: 18 to 28 inches
viewing angle: 20° to center of screen
arms: elbows at 90° and arms and hands parallel to floor
keyboard height: 23 to 28 inches depending on height of user
adjustable backrest
adjustable seat
adjustable height chair with 5 legs for stability
feet flat on floor

Figure 11-43 A well-designed work area should be flexible to allow adjustments to the height and build of different individuals. Good lighting and air quality also are important considerations.

Green Computing

Green computing involves reducing the electricity and environmental waste while using a computer. Computers use, and often waste, resources such as electricity and paper. Society has become aware of this waste and is taking measures to combat it.

Personal computers, monitors, and printers should comply with the **ENERGY STAR program**, which was developed by the United States Department of Energy (DOE) and the United States Environmental Protection Agency (EPA). This program encourages manufacturers to create energy-efficient devices that require little power when they are not in use. For example, many devices switch to standby mode after a specified number of inactive minutes. Computers and devices that meet ENERGY STAR guidelines display an ENERGY STAR® label.

Do not store obsolete computers and devices in your basement, storage room, attic, warehouse, or any other location. Computers, monitors, and other equipment contain toxic materials and potentially dangerous elements including lead, mercury, and flame retardants. In a landfill, these materials release into the environment. Experts recommend refurbishing or recycling the equipment. For this reason, local governments are working on methods to make it easy for the consumer to recycle this type of equipment. Manufacturers can use the millions of pounds of recycled raw material in products such as outdoor furniture and automotive parts.

To reduce further the environmental impact of computing, simply alter a few habits. Figure 11-44 lists the ways you can contribute to green computing.

GREEN COMPUTING SUGGESTIONS

1. **Use computers and devices that comply with the ENERGY STAR program.**
2. **Do not leave the computer and devices running overnight.**
3. **Turn off your monitor, printer, and other devices when not in use.**
4. **Use paperless methods to communicate.**
5. **Recycle paper.**
6. **Buy recycled paper.**
7. **Recycle toner cartridges.**
8. **Recycle old computers and printers.**
9. **Shop online (saves gas).**
10. **Telecommute (saves gas).**

Figure 11-44 A list of suggestions to make computing healthy for the environment.

Web Link

For more information on green computing, visit the Discovering Computers 2002 Chapter 11 WEB LINK page (**scsite.com/dc2002/ch11/weblink.htm**) and click Green Computing.

ISSUE

Cyberspace Addiction

Internet Addiction Disorder

USA TODAY recently reported on a study that indicates more than six percent of Internet users suffer from Internet addiction disorder (IAD). Researcher David Greenfield, who conducted the study, says marriages are being disrupted, kids are getting into trouble, people are committing illegal acts, and are spending too much money for online purchases. Do you agree that IAD exists? Is someone in your family suffering from IAD? Do families spend more quality time together because of all the electronic conveniences in the home? Or, do family members spend more time using these devices and less time with the family? Can one partner spending time in a chat room be a problem for married couples? Can chat rooms be a problem for children?

For more information on Internet addiction disorder, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #14.

ETHICS AND SOCIETY

As with any powerful technology, computers can be used for both good and bad actions. The standards that determine whether an action is good or bad are known as ethics. **Computer ethics** are the moral guidelines that govern the use of computers and information systems. Six frequently discussed areas of computer ethics are unauthorized use of computer systems, software theft (piracy), information privacy, information accuracy, intellectual property rights, and codes of conduct. The questionnaire in Figure 11-45 raises issues in each of these areas.

The next chapter discusses issues related to unauthorized use, software piracy, and information privacy. The following section deals with the accuracy of computer information, intellectual property rights, and codes of conduct.

Information Accuracy

People need to be aware of issues associated with the accuracy of computer input. Inaccurate input can result in erroneous information and incorrect decisions based on that information.

Information accuracy today is even more of an issue because many users access information maintained by other people or companies, such as on the Internet. Do not assume that because the information is on the Web that it is right. You should evaluate the value of a Web page before relying on its content (Figure 11-46).

Be aware the company providing access to the information may not be the creator of the information. For example, airline flight schedules are available through several Web sites. The question that arises is who is responsible for the accuracy of this information? Does the responsibility rest solely with the original creator of the information, or does the service that passes along the information also have some responsibility to verify its accuracy? Legally, these questions have not been resolved.

	ETHICAL	UNETHICAL
1. A company requires employees to wear badges that track their whereabouts while at work.	☐	☐
2. A supervisor reads an employee's e-mail.	☐	☐
3. An employee uses his computer at work to send e-mail messages to a friend.	☐	☐
4. An employee sends an e-mail message to several co-workers and blind copies his supervisor.	☐	☐
5. An employee forwards an e-mail message to a third party without permission from the sender of the message.	☐	☐
6. An employee uses her computer at work to complete a homework assignment for school.	☐	☐
7. The vice president of your Student Government Association (SGA) downloads a photograph from the Web and uses it in a flier recruiting SGA members.	☐	☐
8. A student copies text from the Web and uses it in a research paper for his English Composition class.	☐	☐
9. An employee sends political campaign material to individuals on her employer's mailing list.	☐	☐
10. As an employee in the registration office, you have access to student grades. You look up grades for your friends so they do not have to wait for delivery of grade reports from the postal service.	☐	☐
11. An employee makes a copy of software and installs it on her computer at home. No one uses her computer at home while she is at work, and she uses her computer at home only to finish projects from work.	☐	☐
12. An employee that has been laid off installs a computer virus on his employer's computer.	☐	☐
13. A person designing a Web page finds one on the Web similar to his requirements, copies it, modifies it, and publishes it as his own Web page.	☐	☐
14. A student researches solely using the Web to write a report.	☐	☐
15. In a society in which all transactions occur online (a cashless society), the government tracks every transaction you make and automatically deducts taxes from your bank account.	☐	☐
16. Someone copies a well-known novel to the Web and encourages others to read it.	☐	☐

Figure 11-45 Indicate whether you think the situation described is ethical or unethical. Discuss your answers with your instructor and other students.

GUIDELINES FOR EVALUATING THE VALUE OF A WEB SITE

Evaluation Criteria	Reliable Web Pages
Audience	The Web page should be written at an appropriate level.
Authority	The Web page should list the author and the appropriate credentials.
Affiliation	A reputable institution should support the Web site without bias in the information.
Content	The Web page should be well organized and the links should work.
Currency	The information on the Web page should be current.
Design	The Web site should load quickly, and be pleasing visually and easy to navigate.
Objectivity	The Web page should contain little advertising and be free of bias.

Figure 11-46 Criteria for evaluating a Web site's content.

APPLY IT!

Check Your Credit Report

If you are applying for a loan or credit card, records of your previous financial history are vital. Whether or not you are given the loan or credit card may depend on a network of credit reporting agencies that either share information with, or are owned by, three major credit bureaus. A credit scoring system is applied to your credit report. Lenders rely on the numbers generated by this scoring system to determine whether to offer someone credit. Check your credit report periodically to determine your score and to ensure that your report is in good standing. The following list provides information on how to obtain a copy of your credit report.

1. You can request a copy from one of the three credit bureaus (see URL below). Depending on the state in which you live, you may have to pay a small fee. Call the appropriate agency and follow its instructions.
2. If you applied for and were denied a loan, you are entitled to a free copy of your credit report. Submit a request in writing within 30 days of the rejection.
3. If you are unemployed and looking for employment, receive public welfare assistance, or believe that your credit file contains fraudulent statements, you are entitled to a free copy of your credit report.

After receiving the report, verify the following is correct: name, Social Security number, date of birth, residential addresses, past employment addresses, and closed accounts. Your report should not contain records of any bankruptcies more than 10 years old or lawsuits, judgments, and other unfavorable information more than 7 years old. If you find errors, ask to have those errors corrected. You are protected under the Fair Credit Billing Act (see URL below).

For more information on societal issues, credit reports, and the Web sites mentioned above, visit the Discovering Computers 2002 Apply It Web page (**scsite.com/dc2002/apply.htm**) and click Chapter 11 Apply It #3.

TECHNOLOGY TRAILBLAZER

MITCH **KAPOR**

Experience as a disc jockey and stand-up comic generally are not prerequisites for a multi-million-dollar career as a software programmer. For Mitch Kapor, however, these jobs led to founding the Lotus Development Company, creating Lotus 1-2-3, and co-founding the Electronic Frontier Foundation, a not-for-profit organization dedicated to protecting online privacy, free expression, and access to public resources.

Kapor studied linguistics and psychology at Yale University. After graduating in 1971, he worked as a disc jockey, a Transcendental Meditation teacher, and an entry-level computer programmer. Kapor developed the Apple II's first graphics and statistics program and then became product manager for the company that created VisiCalc, the first electronic spreadsheet. Completing all but his final semester at MIT's Sloan School of Management, Kapor left MIT to take a job in Silicon Valley, where he founded Lotus Development Corporation in 1982 and created Lotus 1-2-3.

Today, Kapor is active in running a leading venture capital firm, overseeing his Mitchell Kapor Foundation, which helps people attempt to balance humanitarian and environmental concerns. He also writes numerous articles analyzing computers' effects on society.

For more information on Mitch Kapor, visit the Discovering Computers 2002 People Web page (**scsite.com/dc2002/people.htm**) and click Mitch Kapor.

In addition to concerns about the accuracy of computer input, some people raise questions about the ethics of using computers to alter output, primarily graphic output such as retouched photographs. Using graphics equipment and software, you can digitize photographs and then add, change, or remove images (Figure 11-47). One group that opposes any manipulation of an image is the National Press Photographers Association. It believes that allowing even the slightest alteration eventually could lead to deliberately misleading photographs. Others believe that digital photograph retouching is acceptable as long as the significant content or meaning of the photograph does not change. Digital retouching is another area where legal precedents have not been established yet.

ISSUE

Digital Dilemma

Ethics and Society

The Web is one of the world's largest libraries and surely the world's largest copy machine. The global reach of the Web has added substantially to the production of an astonishing abundance of information in digital form, as well as offering unprecedented ease of access. Creating, publishing, distributing, and using information is easier and faster. The good news is the explosive growth and the wealth of knowledge brought by the Web enriches society. The bad news is people easily can obtain illegal copies of information or intellectual property available on the Web without the consent of the originator. Copyright laws have been in place for more than 200 years, but protecting intellectual property never has been an easy task. Now, the capability to convert information into digital format easily makes it even more difficult. Will copyright laws be changed? Should copyright laws be changed? Is it ethical to download copyrighted music to your computer for personal use? Is it legal? Can governments enforce copyright laws? What rights should the individual have who created the original work?

For more information on ethics and society and intellectual copyright issues, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #15.

Intellectual Property Rights

Intellectual property (**IP**) refers to work created by inventors, authors, and artists. **Intellectual property rights** are the rights to which creators are entitled for their inventions, writings, and works of art. Certain issues arise surrounding IP today because many of these works are available digitally. These include copyright and trademark infringement.

A **copyright** gives authors and artists exclusive rights to duplicate, publish, and sell their material. A copyright protects any tangible form of expression. A common infringement of copyright is software piracy. **Software piracy** is the unauthorized and illegal duplication of copyrighted software. Pirating software, which is discussed in the next chapter in more depth, is illegal.

Other areas are not so clear-cut, with respect to the law because copyright law also gives the public fair use to copyrighted material. The issues surround the phrase, fair use, which allows use for educational and critical purposes. This vague definition is subject to widespread interpretation.

- Should an individual be able to download contents of your Web site, modify it, and then put it on the Web again as their own?
- Should a faculty member have the right to print material from the Web and distribute it to all members of the class for teaching purposes only?
- Should someone be able to scan photographs or pages from a book, publish them to the Web, and allow others to download them?
- Should someone be able to put the lyrics to a song on the Web?
- Should students be able to post term papers they have written on the Web, making it tempting for other students to download and submit it as their own work?

These and many more issues are being debated strongly by members of society. Similar issues surround trademarks. A **trademark** protects a company's logos and brand names. The controversy with trademarks relates to Web addresses. When creating a Web site, some people and smaller companies purposely acquire a Web address that uses the exact trademarked name of their competition. For example,

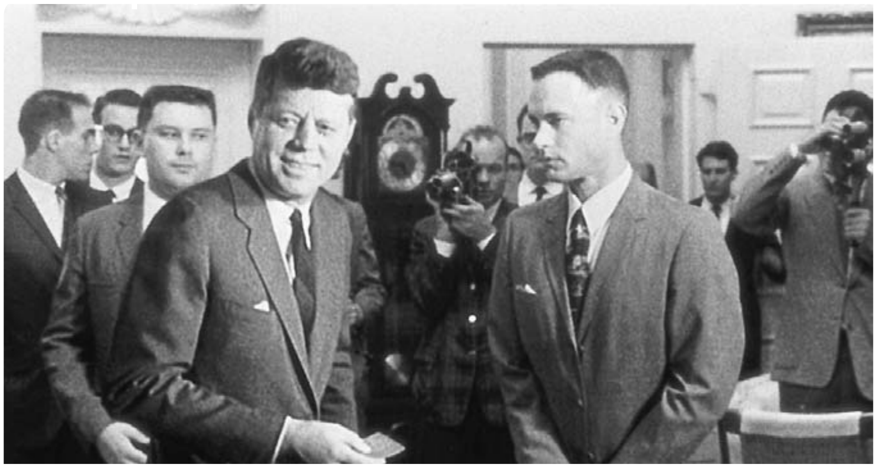


Figure 11-47 President John F. Kennedy seen with Tom Hanks portraying Forrest Gump in this digitally altered photograph.

Macromedia has trademarked the name Flash™. Someone that develops a product similar to Flash™ might acquire a Web address of www.flash.com. A person or company that uses this sneaky technique hopes the public will not know the correct address and end up at their Web site instead.

Codes of Conduct

Recognizing that individuals need specific standards for the ethical use of computers, a number of computer-related organizations have established an IT (information technology) code of conduct (Figure 11-48). An IT **code of conduct** is a written guideline that helps determine whether a specific computer action is ethical or unethical.

IT CODE OF CONDUCT

1. Computers may not be used to harm other people.
2. Employees may not interfere with other's computer work.
3. Employees may not meddle in other's computer files.
4. Computers may not be used to steal.
5. Computers may not be used to bear false witness.
6. Employees may not copy or use software illegally.
7. Employees may not use other's computer resources without authorization.
8. Employees may not use other's output.
9. Employees shall consider the social impact of programs and systems they design.
10. Employees always should use computers in a way that demonstrates consideration and respect for fellow humans.

Figure 11-48 Sample IT code of conduct employers may distribute to employees.

CHAPTER SUMMARY

This chapter presented ways in which the computer has changed society. It discussed ways computers are used at home and in many fields such as education, entertainment, finance, government, health care, science, publishing, and travel. Next, it addressed how emerging technologies are being used in everyday life. Health issues and preventions related to computers also were presented. The chapter ended with a discussion of ethical issues surrounding computer use.

ISSUE

Who Is Responsible?

Ethical Conduct

Many computer-related organizations and professional associations have published guidelines pertaining to computer-related ethical conduct. These codes of conduct help determine if a specific computer action is ethical or unethical. The adherence to and enforcement of these guidelines is, however, an issue in many companies. Consider the following scenario: A programmer is working on a software project for his company. The deadline for the project is approaching quickly, and the programmer realizes he will not be able to meet the deadline. He makes a decision to omit one of the modules he considers non-essential without informing management. The program is released and sold to the public. It immediately crashes. Who is responsible — the programmer or the company? Should the company have a verification policy before releasing the product? If an IT professional violates a code of conduct, what action should a company take? Termination? Leave of absence without pay? Legal action?

For more information on code of ethics and ethical responsibility, visit the Discovering Computers 2002 Issues Web page (**scsite.com/dc2002/issues.htm**) and click Chapter 11 Issue #16.

IT Consultant

Many people would like to be their own boss. Working as a consultant can help you achieve this goal. As the business environment becomes more complex, firms increasingly will rely on outside consultants to help them remain current and competitive. One of the most in-demand types of consultant is for someone in the field of IT (information technology). To become a successful IT consultant, you need to specialize. Specialties within the field can vary from general to networking, systems analysis to programming, and technical writing to Internet development. Your area of specialty will determine educational requirements, certifications, and work experience. The Occupational Outlook Handbook (see URL below) indicates that more than 55 percent of consultants are self-employed, which is about 4 times the average for other executive, administrative, and managerial occupations. The industry is one of the highest paying, but most of the self-employed have worked previously in the private or public sector.

To be a successful consultant requires at least a bachelor's degree and possibly a master's, depending on the area of specialization. Many consultants travel extensively. Salaries range anywhere from $25,000 to more than $250,000 per year.

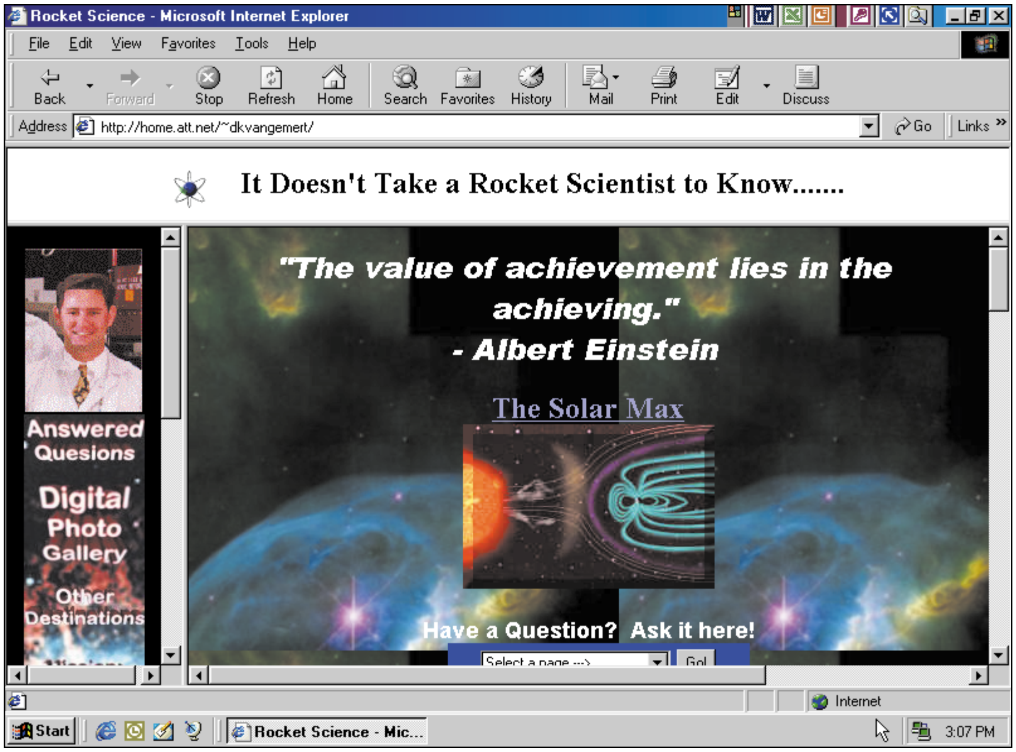
To learn more about the field of IT consulting as a career and for links to the Web site mentioned above, visit the Discovering Computers 2002 Careers Web page (**scsite.com/dc2002/careers.htm**) and click IT Consultant.

E-SCIENCE

E = MC²

Rocket Science on the Web

For some people, space exploration is a hobby. Building and launching model rockets allow these scientists to participate in exploring the great frontier of space. For others, space exploration is their life. For one such person, building rocket engines is his full-time job. Dennis K. Van Gemert is an engineer and scientist with the Boeing Company. Because of his passion for science, he created a Web site, shown in Figure 11-49, where curious individuals can write and ask him questions.


Rocket Science - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://home.att.net/~dkvangemert/
Go Links
Internet
Start
Rocket Science - Mic...
3:07 PM

It Doesn't Take a Rocket Scientist to Know.......

"The value of achievement lies in the achieving."
- Albert Einstein

The Solar Max

Answered Quesions

Digital Photo Gallery

Other Destinations

Have a Question? Ask it here!

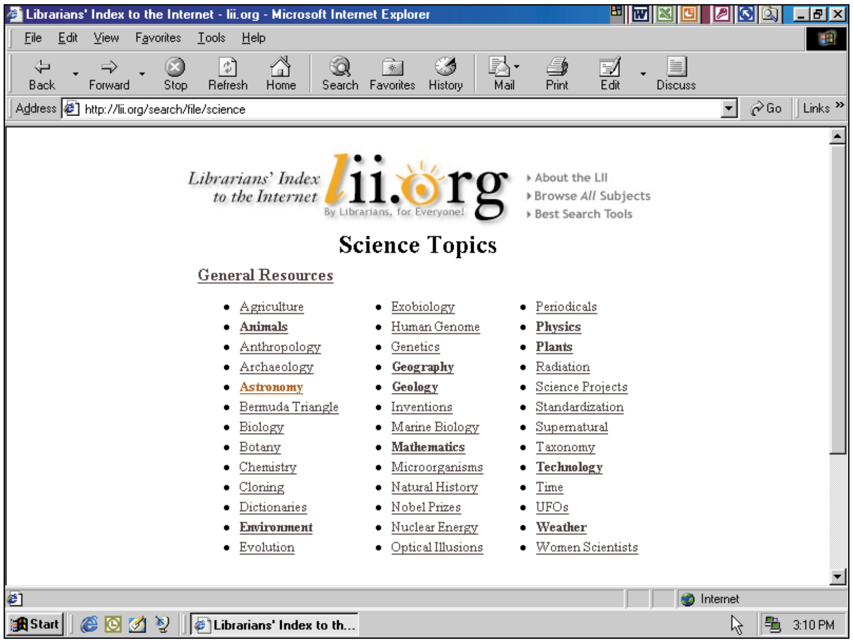
Select a page --->

Go!

Figure 11-49 The Dennis K. Van Gemert extensive Rocket Science Web site takes space exploration to new heights.

The main page of Van Gemert's Web site contains links to rocket history, a virtual tour of Cape Canaveral in Florida, Mark Wade's Encyclopedia Astronautica, and such aeronautical sites as NASA, Boeing, and the American Institute of Aeronautics and Astronautics.

Rockets and space are not the only areas to explore in the world of science. Where can you find the latest pictures taken with the Hubble telescope? Do you know which cities experienced an earthquake today? Have you ever wondered what a 3-D model of the amino acid glutamine looks like? You can find the answer to these questions and many others through the Librarians' Index to the Internet (lii.org) shown in Figure 11-50.


Librarians' Index to the Internet - lii.org - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://lii.org/search/file/science
Go Links
Internet
Start
Librarians' Index to th...
3:10 PM

Librarians' Index to the Internet
lii.org
By Librarians, for Everyone!

- About the LII
- Browse *All* Subjects
- Best Search Tools

Science Topics

General Resources

- Agriculture
- **Animals**
- Anthropology
- Archaeology
- **Astronomy**
- Bermuda Triangle
- Biology
- Botany
- Chemistry
- Cloning
- Dictionaries
- **Environment**
- Evolution
- Exobiology
- Human Genome
- Genetics
- **Geography**
- **Geology**
- Inventions
- Marine Biology
- **Mathematics**
- Microorganisms
- Natural History
- Nobel Prizes
- Nuclear Energy
- Optical Illusions
- Periodicals
- **Physics**
- **Plants**
- Radiation
- Science Projects
- Standardization
- Supernatural
- Taxonomy
- **Technology**
- Time
- UFOs
- **Weather**
- Women Scientists

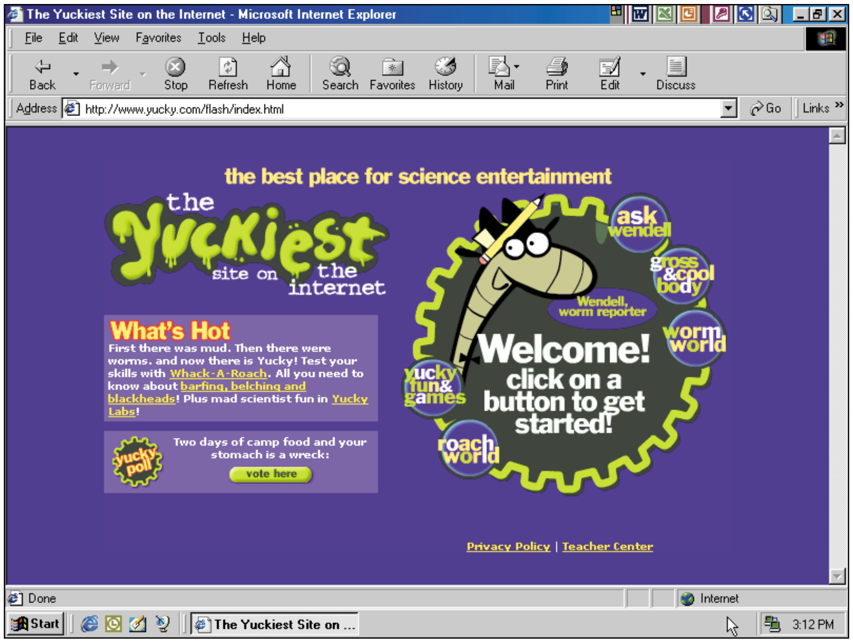
Figure 11-50 Numerous science resources are organized clearly in the Librarians' Index to the Internet.

This index can take you to the Hurricane Center so you can track a hurricane or fly through the eye of a hurricane with the Hurricane Hunters. It also provides a link to the National Earthquake Information Center where you can learn the locations and the intensities of earthquakes that have occurred in the past few days.

The Yuckiest Site on the Internet Web site (Figure 11-51) from Discovery Communications entertains as it teaches; especially when children are involved. Combined with Discovery Kids TV, the Web site features fun and games, crafts, recipes, and other activities that capture kids' imaginations as they learn science through adventure and experiments.

The Web offers a wide variety of science resources designed for all ages. Professional scientists, students, hobbyists, and children can find information with a few clicks of the mouse. The Web sites can answer technical questions and discuss the latest research to help students or merely satisfy a thirst for knowledge.

For more information on science resource Web sites, visit the Discovering Computers 2002 E-Revolution Web page (scsite.com/ dc2002/e-rev.htm) and click Science.


The Yuckiest Site on the Internet - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://www.yucky.com/flash/index.html
Go Links
the best place for science entertainment
the Yuckiest site on the internet
ask wendell
gross & cool body
Wendell, worm reporter
worm world
yucky fun & games
roach world
Welcome! click on a button to get started!
yucky poll
vote here
Privacy Policy | Teacher Center
Done
Internet
Start
The Yuckiest Site on ...
3:12 PM

What's Hot

First there was mud. Then there were worms. and now there is Yucky! Test your skills with Whack-A-Roach. All you need to know about barfing, belching and blackheads! Plus mad scientist fun in Yucky Labs!

Two days of camp food and your stomach is a wreck:

Figure 11-51 The Yuckiest Site on the Internet Web site makes learning science fun for children.

SCIENCE RESOURCE WEB SITES	URL
Periodicals	
Astronomy.com	astronomy.com
Discovering Archaeology	discoveringarchaeology.com
New Scientist	newscientist.com
OceanLink	oceanlink.island.net
Science Magazine	sciencemag.org
Scientific American	sciam.com
Resources	
National Science Foundation (NSF)	nsf.gov
SOFWEB Useful Internet Resources	www.sofweb.vic.edu.au/resource/ressci.htm
To Science Databases	www.internets.com/sscilink.htm
Science Community	
Federation of American Scientists	fas.org
Sigma XI, The Scientific Research Society	amsci.org or sigmaxi.org

For an updated list of science resource Web sites, visit scsite.com/dc2002/e-rev.htm.

Figure 11-52 Resources available on the Internet offer a wide range of subjects for enthusiasts who want to delve into familiar and unknown territories in the world of science.

eREVOLUTION E-SCIENCE applied:

1. Visit Dennis Van Gemert's Rocket Science Web site shown in Figure 11-49. View A Brief History of Rocketry and draw a time line showing the development of the rocket. Then, view the Astronomy.com Web site listed in Figure 11-52, read two topics in the Discussion Forums and two articles in the Feature Stories section, and write a summary of the astronomy subjects covered.

2. Visit the Librarians' Index to the Internet shown in Figure 11-50. Click the Inventions topic. View the Web site for the Greatest Engineering Achievements of the 20th Century. Pick two achievements, read their history, and write a paragraph summarizing each of these accomplishments. Then, view two of the science resources Web Sites listed in Figure 11-52 and write a paragraph on each of these Web sites describing the information each contains.

In Summary

Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch11/summary.htm. Click the links for current and additional information. To listen to an audio version of this In Summary, click the Audio button. To play the audio, RealPlayer must be installed on your computer (download by clicking here).

1 How Have Computers Made a Difference in Daily Living?

Computers are everywhere in society today — at home, at work, and at play. Both business and home users have benefited greatly. Instant access to information from anywhere in the world has contributed to tremendous increases in productivity. Nearly every discipline uses computers. Most daily activities either involve the use of or depend on information from a computer.

2 How Are Computers Used at Home?

The computer has become a necessity in many homes. Some uses for a family computer include entertainment, research and education, budgeting and personal financial management, home business management, personal and business communications, and Web access. Each family member may use the computer for some or all of these purpose.

3 How Have Computers Changed the Way Society Interacts with Disciplines Such as Education, Entertainment, Finance, Government, Health Care, Science, Publishing, and Travel?

Educators today are using computers to assist with the learning process, including **computer-based training** (**CBT**) and **Web-based training** (**WBT**). **Simulations**, or computer-based models of real-life situations, allow students to learn skills in hazardous, emergency, or other situations. **Distance learning** (**DL**), also called **distance education** (**DE**) or **online learning**, is the delivery of education at one location while the learning takes place at other locations. The computer provides several entertainment options, including games, listening to music, and creating digital photographs. Using **personal finance software**, you can pay bills and track expenses. With **online banking**, you transfer money electronically from one account to another. Multiple Web sites provide government and health-related information. All branches of science use computers to assist with collecting, analyzing, and modeling data. Publishers use computers to perform their daily jobs, and on many Web sites, you can download **electronic books** (**e-books**). When traveling, your vehicle may have a **GPS** (**global positioning system**) to help provide you with directions.

4 What Are the Issues Associated with the Digital Divide?

The digital divide is the idea that you can separate people of the world into two distinct groups: (1) those who have access to technology with the ability to use it, and (2) those who do not have access to technology or are unable to use it. Several programs are underway to narrow the gap, including the Microsoft/Toshiba **Anytime Anywhere Learning program**. **PowerUp** is a nationwide industry partnership whose goal is to place technology in schools and community centers.

5 How Does E-Commerce Affect the Way People Conduct Business?

E-commerce is financial business transactions that occur over an electronic network such as the Internet. E-commerce has changed the way people conduct business by virtually eliminating the barriers of time and distance. Transactions can occur instantaneously and globally. You can purchase just about any good or service on the Web through an **electronic storefront** or **online auction**. Some items, such as a movie ticket, can be delivered directly to a handheld computer. A reader at the movie theater wirelessly collects the ticket from your handheld computer. Airline tickets, event tickets, train tickets, and coupons are just a few other examples of uses of the short-range wireless communications technology, called **Bluetooth™**.

In Summary

6 What Are the Ways in Which Virtual Reality, Intelligent Agents, and Robots Are Being Used in Everyday Life?

Virtual reality (**VR**) is the use of computers to simulate a real or imagined environment that appears as a three-dimensional (3-D) space. VR is being used in training, engineering, e-commerce, science, and medicine. An **intelligent agent** is a software program that carries out tasks on behalf of a user, such as correcting spelling. A **robot** is a computer-controlled device that moves and reacts to feedback from the outside world. Robots have been used mostly in industry, but the cost is dropping. As a result, some manufacturers are making entertainment and personal servant robots.

7 How Can You Prevent Health-Related Disorders and Injuries Due to Computer Use?

Long-term computer use can lead to health complications. Some examples of computer health-related problems are **musculoskeletal disorder** (**MSD**), also called **repetitive stress injury** (**RSI**), **tendonitis**, **carpal tunnel syndrome** (**CTS**), and **computer vision syndrome** (**CVS**). Taking frequent breaks and exercising your hands and arms may help prevent some of these injuries.

8 What Is an Ergonomically Designed Workspace?

Ergonomics is an applied science devoted to incorporate comfort, efficiency, and safety into the design of items in the workplace. The work area should be at least two feet by four feet. Some keyboards have built-in wrist rests. Monitors have a tilt-and-swivel base and controls that allow you to adjust the brightness, contrast, positioning, height, and width of images. Monitors should meet the **MPR II standard**, which defines acceptable levels of radiation.

9 What Are the Symptoms of Computer Addiction?

Computer addiction is a growing health problem and occurs when the computer consumes someone's entire social life. Users addicted to the Internet are said to have an **Internet addiction disorder (IAD)**. Symptoms of this addiction include inability to stop computer activity, irritability when not at a computer, neglecting family and friends, and problems at work or school.

10 What Is Green Computing?

Green computing involves reducing the electricity and environmental waste while using a computer. Personal computers, monitors, and printers should comply with the **ENERGY STAR program**, which was developed by the United States Department of Energy (DOE) and the United States Environmental Protection Agency (EPA). All obsolete computer equipment should be recycled or disposed of properly.

11 What Are the Ethical Issues Surrounding Computer Use?

Computer ethics are the moral guidelines that govern the use of computers and information systems. The six areas of computer ethics include unauthorized use of computer systems, software theft (piracy), information privacy, information accuracy, intellectual property rights, and codes of conduct. **Intellectual property** (**IP**) is the work created by inventors, authors, and artists, and **intellectual property rights** are the rights to which these creators are entitled for their inventions, writings, and works of art. **Software piracy** is the illegal duplication of **copyrighted** software.

Key Terms

Student Exercises Web Links In Summary Key Terms Learn It Online Checkpoint In The Lab Web Work
Special Features ■ TIMELINE 2002 ■ WWW & E-SKILLS ■ MULTIMEDIA ■ BUYER'S GUIDE 2002 ■ WIRELESS TECHNOLOGY ■ TRENDS 2002 ■ INTERACTIVE LABS ■ TECH NEWS

Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch11/terms.htm. Scroll through the list of terms. Click a term to display its definition and a picture. Click the To WEB button for current and additional information about the term from the Web. To see animations, Shockwave and Flash Player must be installed on your computer (download by clicking here).

Anytime Anywhere Learning program (11.10)
artificial intelligence (AI) (11.28)
Bluetooth™ (11.14)
bot (11.29)
carpal tunnel syndrome (CTS) (11.31)
code of conduct (11.37)
computer addiction (11.32)
computer ethics (11.34)
computer vision syndrome (CVS) (11.31)
computer-aided instruction (CAI) (11.6)
computer-aided surgery (CAS) (11.20)
computer-based training (CBT) (11.6)
copyright (11.36)
digital camera (11.12)
distance education (DE) (11.8)
distance learning (DL) (11.8)
e-commerce (11.13)
education (11.6)
edutainment (11.8)
electronic books (e-books) (11.22)
electronic commerce (11.13)
electronic storefront (11.14)
ENERGY STAR program (11.33)
ergonomics (11.32)
GPS (global positioning system) (11.24)
green computing (11.33)

DIGITAL CAMERA
Camera used to take pictures and store the photographed images digitally instead of on traditional film. Some digital cameras allow a download of the stored pictures to a computer. (11.12)

intellectual property (IP) (11.36)
intellectual property rights (11.36)
intelligent agent (11.29)
Internet addiction disorder (IAD) (11.32)
Internet appliances (11.5)
MPR II standard (11.32)
musculoskeletal disorder (MSD) (11.30)
network agent (11.29)
neural network (11.22)
online auction (11.14)
online banking (11.14)
online learning (11.8)
online stock trading (11.16)

personal finance software (11.14)
PowerUp (11.10)
publishing (11.22)
repetitive stress injury (RSI) (11.30)
robot (11.30)
shopping cart (11.14)
simulations (11.7)
smart software (11.28)
software piracy (11.36)
telecommuting (11.26)
telemedicine (11.19)
tendonitis (11.31)
trademark (11.36)
virtual reality (VR) (11.27)
VR world (11.27)
Web bar codes (11.24)
Web-based training (WBT) (11.6)

INTERNET APPLIANCE
Device designed specifically to connect to the Internet; the most popular are set-top boxes, smart phones, smart pagers, and Web-enabled PDAs. Also called Web appliance. (11.5)

Learn It Online

Web Instructions: To display this page from the Web, start your browser, enter the URL scsite.com/dc2002/ch11/learn.htm.

1. Web Guide

Click Web Guide to display the Guide to World Wide Web Sites and Searching Techniques Web page. Click Shopping and then click Consumer World. Scroll down the page and locate an article of interest. Prepare a brief report of your findings and submit your assignment to your instructor.

2. Scavenger Hunt

Click Scavenger Hunt. Print a copy of the Scavenger Hunt page; use this page to write down your answers as you search the Web. Submit your completed page to your instructor.

3. Who Wants to Be a Computer Genius?

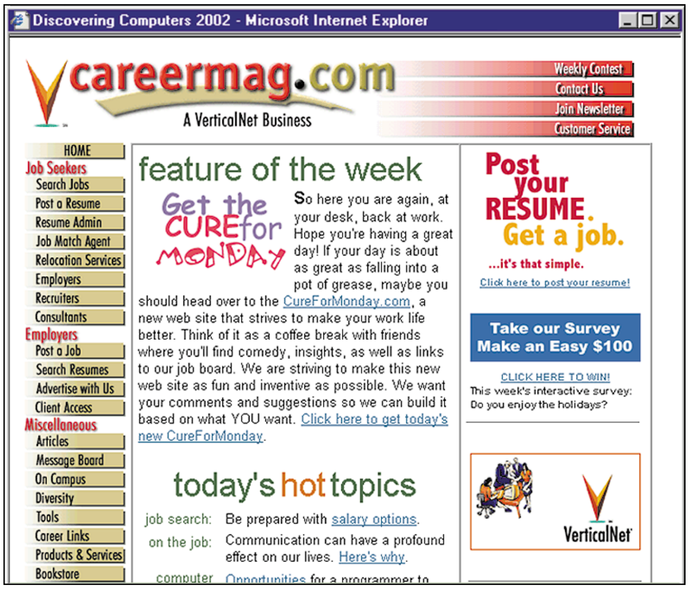
Click Computer Genius to find out if you are a computer genius. Directions on how to play the game will display. When you are ready to play, click the Play button. Submit your score to your instructor.

4. Wheel of Terms

Click Wheel of Terms to reinforce important terms you learned in this chapter by playing the Shelly Cashman Series version of this popular game. Directions on how to play the game will display. When you are ready to play, click the PLAY button. Submit your score to your instructor.

5. Career Corner

Click Career Corner to display the Career Magazine page. Click the Feature of the Week link. Review this page, clicking any links within the page. Write a brief report on what you discovered in this feature. Submit the report to your instructor.



So here you are again, at your desk, back at work. Hope you're having a great day! If your day is about as great as falling into a pot of grease, maybe you should head over to the CureForMonday.com, a new web site that strives to make your work life better. Think of it as a coffee break with friends where you'll find comedy, insights, as well as links to our job board. We are striving to make this new web site as fun and inventive as possible. We want your comments and suggestions so we can build it based on what YOU want. Click here to get today's new CureForMonday.

This week's interactive survey: Do you enjoy the holidays?

job search: Be prepared with salary options.
on the job: Communication can have a profound effect on our lives. Here's why.
computer Opportunities for a programmer to

6. Search Sleuth

Click Search Sleuth to learn search techniques that will help make you a research expert. Submit the completed assignment to your instructor.

7. Crossword Puzzle Challenge

Click Crossword Puzzle Challenge. Complete the puzzle to reinforce skills you learned in this chapter. Directions on how to play the game will display. When you are ready to play, click the PLAY button. Submit the completed puzzle to your instructor.

8. Practice Test

Click Practice Test. Answer each question. When completed, enter your name and click the Grade Test button to submit the quiz for grading. Make a note of any missed questions. If required, print a copy to submit to your instructor.

Checkpoint

Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch11/check.htm. Click the links for current and additional information. To experience the animation and interactivity, Shockwave and Flash Player must be installed on your computer (download by clicking here.)

LABEL THE FIGURE

Instructions: Complete the Evaluation Criteria column in this guideline document.

GUIDELINES FOR EVALUATING THE VALUE OF A WEB SITE

Evaluation Criteria	Reliable Web Pages
1. ____________	The Web page should be written at an appropriate level.
2. ____________	The Web page should list the author and the appropriate credentials.
3. ____________	A reputable institution should support the Web site without bias in the information.
4. ____________	The Web page should be well organized and the links should work.
5. ____________	The information on the Web page should be current.
6. ____________	The Web site should load quickly, and be pleasing visually and easy to navigate.
7. ____________	The Web page should contain little advertising and be free of bias.

MATCHING

Instructions: Match each term from the column on the left with the best description from the column on the right.

_______ 1. intellectual property rights
_______ 2. edutainment
_______ 3. virtual reality
_______ 4. distance learning
_______ 5. ergonomics

a. A type of educational software that combines education with entertainment.
b. A financial business transaction that occurs over an electronic network such as the Internet.
c. The rights to which creators are entitled for their inventions, writings, and works of art.
d. The use of computers to simulate a real or imagined environment.
e. The delivery of education at one location while the learning takes place at other locations.
f. The incorporation of comfort, efficiency, and safety into the design of workplace items.
g. A work arrangement in which employees work away from a company's standard workplace.

Checkpoint

MULTIPLE CHOICE

Instructions: Select the letter of the correct answer for each of the following questions.

1. ___________ is a type of training that uses Internet technology.
   a. Computer-based training
   b. Computer-aided instruction
   c. Web-based training
   d. Edutainment
2. ___________ involves using computer simulations to assist in learning surgical techniques.
   a. Computer-aided surgery
   b. Telemedicine
   c. Robotics
   d. Intelligent agents
3. A recent development that links printed media to the Web is called ___________ .
   a. electronic books
   b. Web bar codes
   c. CBT
   d. AI
4. A book published online is called a(n) ___________ book.
   a. Web
   b. online
   c. electronic
   d. published
5. ___________ is the application of human intelligence to computers.
   a. Green computing
   b. AI
   c. Networking
   d. Neural networks

SHORT ANSWER

Instructions: Write a brief answer to each of the following questions.

1. What is an Internet appliance? ___________ Why would someone want to use one of these devices? ___________
2. What is CBT? ___________ What are some advantages of CBT? ___________ How do simulations help someone learn? ___________
3. What is e-commerce? ___________ How has it changed the way in which an organization does business? ___________ What are some examples of e-commerce transactions? ___________
4. What is a global positioning system (GPS)? ___________ What are some advantages of a GPS? ___________
5. What is the digital divide? ___________ What agencies and companies are working to eliminate the divide? ___________ What programs have been launched in an effort to eliminate the digital divide? ___________

WORKING TOGETHER

Instructions: Working with a group of your classmates, complete the following team exercise.

Create a report on the digital divide. Within the report, give a brief overview of the following: (1) an explanation of the digital divide and why it exists; (2) an overview of how the divide affects the United States and the world; (3) what efforts are underway to eliminate the divide; and (4) pros and cons of these efforts. Use your word processing program to prepare a written report and PowerPoint to present the report to your class. Include links to at least three Web sites that your group used as reference sources.

In The Lab

Web Instructions: To display this page from the Web, launch your browser and enter the URL scsite.com/dc2002/ch11/lab.htm. Click the links for current and additional information.

1

Playing Audio Compact Disks

This exercise uses Windows 2000 procedures. Click the Start button on the taskbar, point to Programs on the Start menu, and then point to Accessories on the Programs submenu. Point to Entertainment on the Accessories submenu, and then click CD Player on the Entertainment submenu. When the CD Player displays, click the Options button and then click CD Player Help on the Options button menu. When the CD Player window opens read the Help information and answer the following questions:

- How do you play a CD?
- How do you stop a CD?
- How do you eject a CD from the drive?

Close the CD Player window. If your system has a CD-ROM drive and a sound card, insert a CD into the CD-ROM drive and then play it. Close the CD Player.

Understanding Multimedia Properties

2

This exercise uses Windows 95 or Windows 98 procedures. Click the Start button on the taskbar, point to Settings on the Start menu, and then click Control Panel on the Settings submenu. When the Control Panel window opens, double-click the Multimedia icon. When the Multimedia Properties dialog box displays, if necessary, click the Audio tab and then answer the following questions:

- What is the Playback Preferred device?
- Will the volume control display on the taskbar of your computer?

Click the Advanced or Devices tab. For each multimedia device listed, if a plus sign (+) displays in the box to its left, click the plus sign to change it to a minus sign (–). For each device driver listed, write down the name(s) of the hardware device(s) installed on your system. Close the Multimedia Properties dialog box and the Control Panel window.

3

Dragging and Dropping Windows Objects

This exercise uses Windows 98 procedures. Dragging and dropping objects in Windows 98 causes different things to happen. For example, if you drag a program icon from one folder to another or to the desktop, Windows assumes you want to create a shortcut. If you drag a file from one folder to another or to the desktop, Windows assumes you want to move it. Or, if you drag an object from one drive to another, Windows assumes you want to copy it. You can specify the kind of drag-and-drop operation you want to perform by holding down the right mouse button and dragging the object (right-dragging). Insert the Discover Data Disk into drive A. See the inside back cover of this book for instructions for downloading the Data Disk or see your instructor for information on accessing the files required in this book. Right-click the Start button on the taskbar and then click Explore on the shortcut menu. Click the 3½ Floppy (A:) icon in the Folders pane of the Exploring - Start Menu window. When the Exploring - 3½ Floppy (A:) window displays, right-click and drag the file name h7-2 in the right pane to the desktop. Release the right mouse button. What are the three commands on the shortcut menu that allow you to perform drag and drop operations? What is a shortcut? Click Cancel on the shortcut menu. Close the Exploring - 3½ Floppy (A:) window.

System Sounds

4

Double-click the My Computer icon on the Desktop. Double-click the Control Panel icon in the My Computer window. Double-click the Sounds icon in the Control Panel window. In the Sounds Properties dialog box, some of the items in the Events list have an associated sound. To hear the sound for an event, click the event in the Events list and then click the right arrow button in the Sound area.

- What events have the same sound?
- Do any events listed have no sound?

Close the Sounds Properties dialog box and the Control Panel window.

Web Work

Web Instructions: To display this page from the Web, start your browser and enter the URL scsite.com/dc2002/ch11/web.htm. To view At The Movies in exercise 1, RealPlayer must be installed on your computer (download by clicking here). To use the Shelly Cashman Series Understanding Multimedia Lab from the Web, Shockwave and Flash Player must be installed on your computer (download by clicking here).

Online Organizations

To view the Online Organizations movie, click the button to the left or click the Play button to the right. Watch the movie, and then complete the exercise by answering the questions below. The Internet has become The Place to organize, whether to rally for a worthy cause or launch a revolution. More than that, new technologies have taken the Internet beyond providing a convenient, efficient meeting place. It also is a means of planning and digitally documenting (audio/video) major events. Organizations around the world use the Web to gather information, plan logistics, arrange transportation, and educate members. Does this make the world safer or more dangerous? Are surveillance and safeguards necessary? What agency, if any, should impose regulations?

Shelly Cashman Series Understanding Multimedia Lab

Follow the instructions in Web Work 2 on page 1.47 to start and use the Shelly Cashman Series Understanding Multimedia Lab. If you are running from the Web, enter the URL, www.scsite.com/sclabs/menu.htm, or display the Web Work page (see instructions at the top of this page) and then click the button to the left.

Digital Cameras

The Creative Web Cam Go is a digital camera that not only takes photographs but, when folded in half and placed on a monitor, can serve as a Web cam. Other digital camera innovations include a digital camera that downloads pictures simply by placing it in a cradle attached to a computer; a digital camera that boasts a 3x optical zoom; and a digital camera that packs auto focus, auto flash, and auto exposure into a package smaller than most conventional cameras. Click the button to the left to learn more about digital cameras and complete this exercise.

Animation and Graphics

Animation and graphics add interest to games and to educational applications. Recent multimedia games have used detailed animation and graphics to add verisimilitude to Louis XIV's Versailles, provide integrity to the shah's Istanbul, and offer substance to Scottish golf courses. Graphics and animation also are used to reinforce Web page content. Click the button to the left to complete this exercise to visit a Web page with hundreds of free animations and graphics you can download on your Web pages.

In the News

Why own the latest video game when you can rent it from the comfort of your personal computer? Yummy Interactive has agreements with leading video-game publishers — Infogrames, Activision, Ripcord Games, and Eidos — that will allow broadband users to download files from Yummy's site to play stand-alone or multi-player games. Yummy's Web site sends users all they need to get started playing the games, and as more bytes are needed, they are sent from the server to the users. Click the button to the left and read a news article about online games and edutainment applications. What applications have been developed? Do you think the applications will be successful? Why or why not? Do you think online games will replace the traditional, local CD-ROM game?